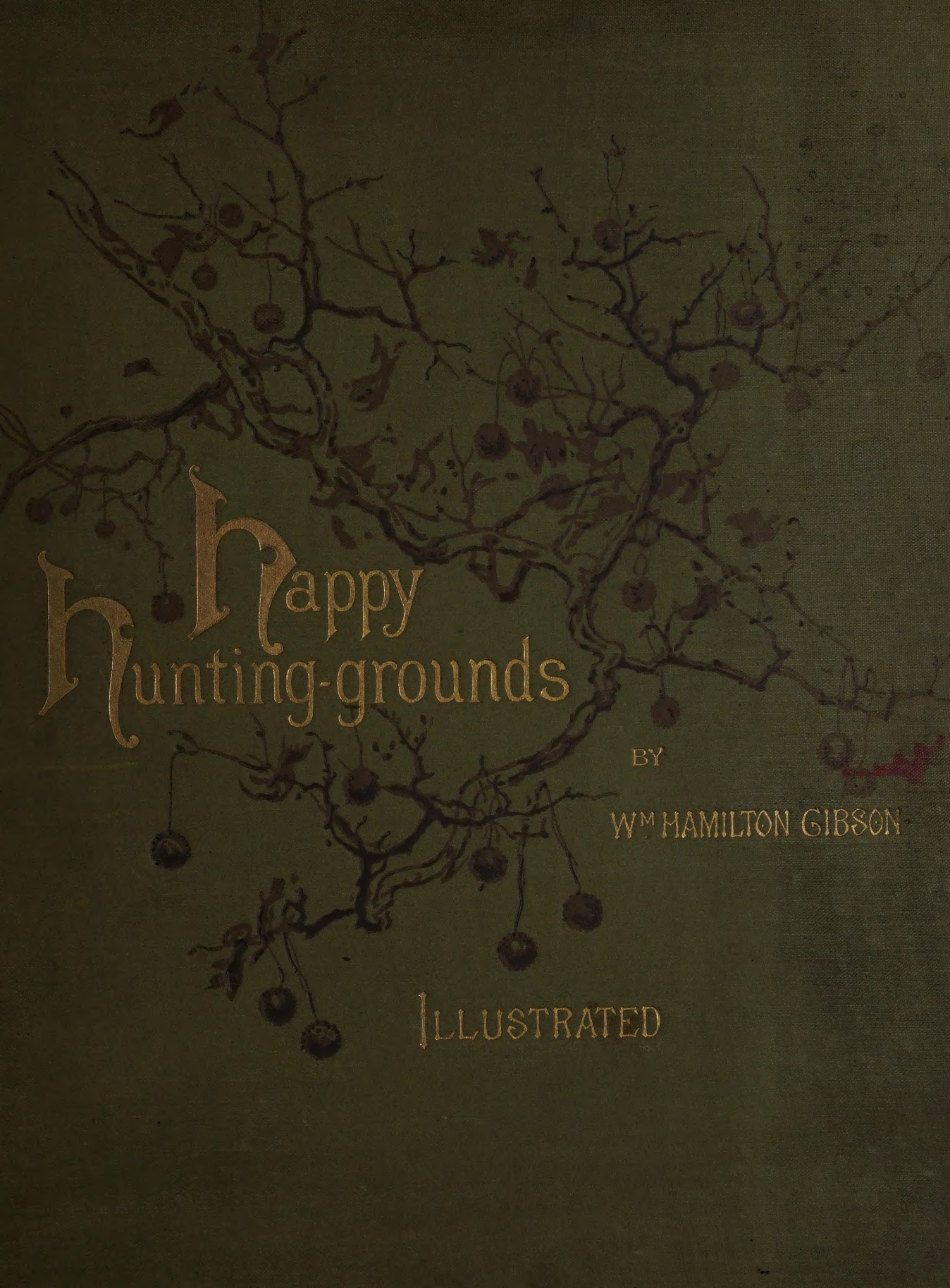


Happy Hunting-grounds

BY

Wm HAMILTON GIBSON

ILLUSTRATED

HAPPY HUNTING-GROUNDS



A WINTER WOOD-PATH.

[illegible] HUNTING-GROUNDS

A TRIBUTE TO THE WOODS AND FIELDS

BY

WILLIAM HAMILTON [illegible]

[illegible] AND "[illegible]"

ILLUSTRATED BY [illegible]

"[illegible]"

NEW YORK

HARPER & BROTHERS, [illegible]

1887



HAPPY HUNTING-GROUNDS

A TRIBUTE TO THE WOODS AND FIELDS

BY

WILLIAM HAMILTON GIBSON

AUTHOR OF "PASTORAL DAYS" AND "HIGHWAYS AND BYWAYS"

ILLUSTRATED BY THE AUTHOR

"Are there not hunters who rally to a nobler music than that of the hunting horn?"

NEW YORK

HARPER & BROTHERS, FRANKLIN SQUARE

1887

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TO

THE REV. HENRY WARD BEECHER

MY PASTOR AND FRIEND

This Volume is Inscribed

IN TOKEN OF

GRATEFUL AND AFFECTIONATE REGARD



AUNTERING.—A word beautifully derived from 'idle people who roved about the country in the Middle Ages, and asked charity under pretence of going, *à la sainte terre*,' to the Holy Land, till the children exclaimed, 'There goes a *sainte terrer*,' a saunterer, a Holy-Lander."

SAUNTERINGS

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THE INWARD EYE.



ASSERT for myself that I do not behold the outward creation, that to me it is hindrance and not action. "What!" it will be questioned, "when the sun rises do you not see a round disk of fire somewhat like a guinea?" Oh, no, no. I see an innumerable company of the heavenly host, crying, "Holy, holy, holy is the Lord God Almighty." I question not my corporeal eye any more than I would question a window. I look through it, and not with it.

WILLIAM BLAKE.



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A WHITE THOUGHT.



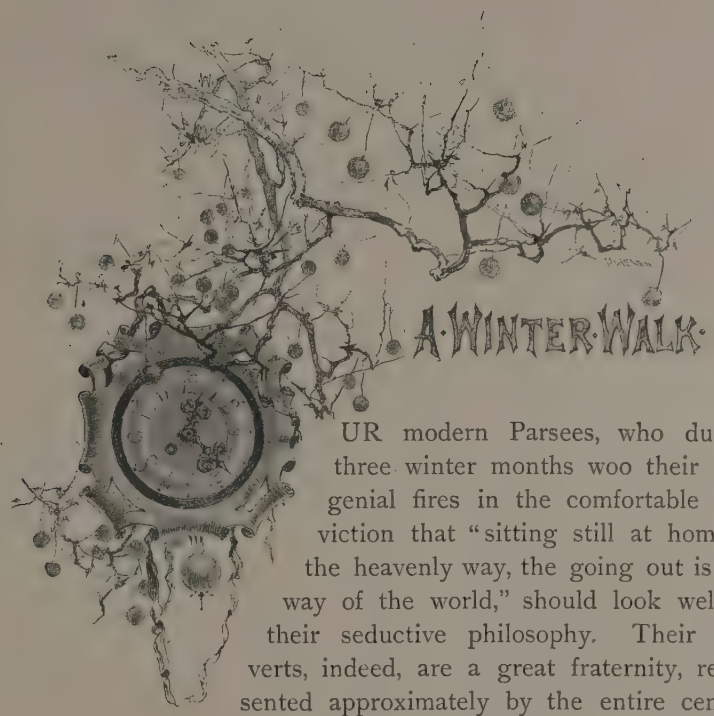
UR mountain hares turn white in winter because they live in and feed upon the snow; and by dint of adoring and feeding upon Beauty, Goodness, and Purity you too will become lovely, holy, and pure.

ST. FRANCIS DE SALES.


A WINTER WALK



A WINTER BOUQUET.



A WINTER WALK.

OUR modern Parsees, who during three winter months woo their congenial fires in the comfortable conviction that "sitting still at home is the heavenly way, the going out is the way of the world," should look well to their seductive philosophy. Their converts, indeed, are a great fraternity, represented approximately by the entire census. With the mercury at zero, and Boreas in hearty sympathy, even the most constant worshipper at the shrine of Nature is apt to become demoralized, desert his allegiance, and worship with Zoroaster and the Guebres. The hearth-stone becomes our altar, the firebrand our emblem.

No one, of course, who values his reputation for sanity will dare deny the cosy cheer of the chimney-corner in winter. We love the bright wood-fire, with its ruddy glow, the snap and crackle and dancing flame. The roar in the chimney flue is wild, weird music to our ears, and our hearth would be a void, indeed, without its realm of faerie among the dying embers.

"The great throat of the chimney laughed," says Whittier; and is there not a joyous significance in these playful flames and wreathing smoke leaping for liberty up the chimney flue? for what is this snap and crackle and glow, if not the token and reminder of the liberated

life, joy, sunshine, and energy, stored through the years in the wild laboratory of Nature?

Yes, the hearth-fire is a boon and a means of grace. We prize our wood-pile in the billet and the cord, but we know it not in its original native haunts. The hearth glow as a steady diet is, after all, but a poor substitute for the fervor of bright winter sunshine. The house-fire, as an intimate, has a warping tendency; which only the best seasoned timber can stand without becoming one-sided. We set the green billets in the chimney-corner, that they may become dry, forgetting that we stand in like danger of becoming mere dry sticks ourselves. Shall we take our sunshine in its virgin state or through the medium of the crucible? The polished hearth and glittering andirons are very attractive in their way, but the radiant snow, the shimmering ice, and spangled frost, give forth a yet more congenial and genuine reflection.

Look out upon the wondrous miracle of this white morning. What marvels have been wrought in a single night! It is blossom time in the welkin. Every sphericle of its floating mist has burst flower-like into bloom, and the air is merry with the tinkling, fluttering legions. How their soft touch has muffled the wind! All through the night the feathery flakes have puffed against our windows while we slept. One by one the familiar sounds of creaking blind and rattling shutter have ceased. Every whistling corner and crevice has been tufted or packed with down, until at last we awake to the reality of an almost audible hush and a conscious sense of quiet resignation, for Old Winter has besieged us unawares, and in playful taunt has laid his white and silent moccasin even at our bedside upon the carpet beneath our window.

At break of dawn, behold! the earth is transfigured. The bleak hills and meadows of yesterday have vanished, lost, it would almost seem, beyond recovery. Our own possessions seem strange and unfamiliar to us, and we can scarce locate our most familiar boundaries.

> "We look upon a world unknown,
> On nothing we can call our own. . . .
> No cloud above, no earth below,
> A universe of sky and snow,"

and celestial purity. According to a beautiful Norse legend, if my memory serves me truly, it was on such a white day as this out of the whole year that the devout Scandinavian peasantry prepared for their



A WHITE MORNING.

impressive household ceremony, when with bowed heads and open doors, with sacramental offerings and murmuring prayers far into the night, they awaited the coming of their Christ—their "Christ of the Snows." Never, indeed, has the earth appeared so worthy of his presence, nor the glory of the heavens been so reflected in her immaculate face. Yonder dove that flutters with flashing wing in the blue zenith seems

bewildered — hovering in limitless space. I fancy the earth itself must be lost in its feathered cloud mists, itself a vast floating field of cloud. The heedful bluebird — almost in color like a tiny gleam through the meteor from another sky — hovers beneath the window with fluttering poise upon the fleecy drift, as if fearful of falling through, recalling, perhaps, a like episode far up in cloud-land. Was ever edge of cirrhous plume as soft and exquisite as this downy brooding wing? Verily the millennium approaches!

The gentle rain falling from heaven alike upon the just and the unjust is the accepted figure of mercy; but the celestial snow, the white-winged rain, is it not even a more fitting symbol? It falls like a universal benison upon the desolated landscape. It comes like the welcome kiss of motherhood to the numb, cold face of nature, and its tender touch is the caress of kindliness and beneficence. The deepest root gives thanks; the dormant dwellers in nest or burrow respond in sympathy; and the quickened earth sends up its grateful emblem beneath the snow-flakes — their mimic starry flower, the chickweed, fuller, whiter, and more perfect now than summer sun has ever seen. Yonder in the woods the drooping hemlocks, with outstretched arms, and clad in their celestial vestments, seem to minister like venerable priests at the baptismal ceremony.

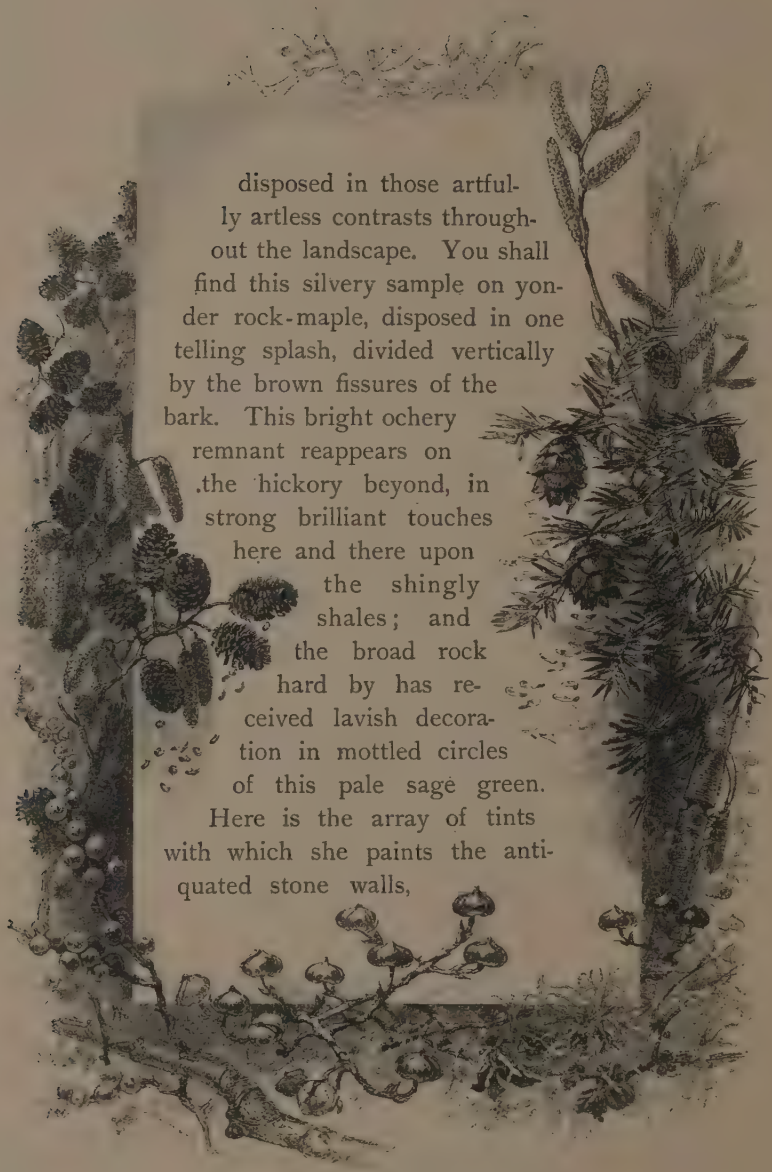
How this clear, purged atmosphere sharpens the sight and opens up the horizon, as the merciful mantle of the snow smooths away all former invidious distinctions, and confounds our arbitrary judgments! In these white fields you shall not know poverty from affluence, worldly distinction from obscure humility. The princely park and the plebeian potato patch are one; their artificial barrier is blotted out and in this universal baptism of beneficence perchance the wonted, uncouth possessions of our neighbor now appear as white and comely as our own. Against this atoning background what a transfigurement! How much that before appeared white and spotless, now betrays its hypocrisy! White lies abound on every hand, though chiefly conspicuous in the haunts of men, while much that erewhile lay under the ban, or was obscured in the vaunting crowd, now stands revealed in a refinement of beauty never before suspected. The delicately fashioned spires of many of our commonly despised weeds, rimed with frost and crowned with snow, rise up in unwonted comeliness, and an underlying quality of grace now first observed receives its full revelation.

Much as one may love the summer, spring, or autumn, he is but a fickle and half-hearted devotee of Nature who bounds such a vision as this by the narrow limits of his window-pane. "Come forth into the light of things," for there is a dazzling light abroad known to no other season. Every flakelet has brought down a sunbeam. Even the snail must needs peep out of his shell on such a day as this. That petulant, jumping spark from the blazing hearth would fain drive you out. Give the wood-fire a brief respite.

> "Up! up! my friend, and quit your books,
> Or surely you'll grow double."

Here outside your window is a yet stranger land than any of which you read. Here is the white-hot fountain of your hearth-fires. A good physician knocks incessantly at your doors, but you would shut him out with bolts and bars; for there is a zest and an elixir in the air in these bright winter days not known to June. These auroral winds have been surcharged with electricity from the boreal batteries. The life and energy and beneficence of the summer clouds — their fiery lightnings thus diffused and propitiated — have been precipitated in this kindling meteor. Each snow-flake is a crystallized electric spark. You walk their vivifying carpet, like Antæus, drinking in new life and strength with every step. Your years are forgotten, often your maladies; the staff becomes a burden, and white hairs a mockery. You no longer saunter and loiter as in the enervating summer days. You leap and dance, and there is a conscious glow and tingle in your being as though these very sparkling crystals were coursing through your veins.

Let us walk out into the inviting woods. The trees can never be so truly seen as now. Their painted trunks, relieved against this neutral foil of snow, disclose a surprising wealth of color, and the exquisite tracery of branch and twig, the essential elements of the tree's beauty and character, heretofore largely concealed by the perishable garniture of foliage, is now disclosed. The true tree, freed from all disguise, stands revealed. Observe the soft, blending tones on the bole of this smooth, dappled beech. See the infinity of refined grays, browns, and greens which everywhere spread and intermelt upon its surface. "The painted beech," it has been happily called. Yes, it is the palette of the sylvan studio. It is Dame Nature's sampler. Upon its smooth surface she mixes and tests her sober and subtler tints, to be afterwards



disposed in those artfully artless contrasts throughout the landscape. You shall find this silvery sample on yonder rock-maple, disposed in one telling splash, divided vertically by the brown fissures of the bark. This bright ochery remnant reappears on the hickory beyond, in strong brilliant touches here and there upon the shingly shales; and the broad rock hard by has received lavish decoration in mottled circles of this pale sage green. Here is the array of tints with which she paints the antiquated stone walls,

and here the sheeny gray by which she has reclaimed the rambling miles of splintered rails. The virescent drab of poplar, the rosy ash of young maple, and the varied mosaic of the mossy bowlder, all may here find their complement.

With its clean, trim contour and bright, smooth complexion, we may readily appreciate the estimate of Thoreau—"No tree has so fair a bole or so handsome an instep as the beech." This latter feature, however, is often lost in the winter woods, as the trees stand knee-deep in snow, and the comely slope of their feet, moccasined in velvety moss, is concealed from view.

It is a common error to suppose that winter, in its absence of foliage, effaces the distinctions of individuality among the various trees. Nothing can be further from the truth. "Are you the friend of your friend's thoughts, or of his buttons?" asks Emerson, as though we should know our companion only by his dress. Many of our trees announce themselves even more distinctly in February than in June. I might truly say that the shagbark never barked as now. The white birch reveals much more of her distinctive pallid feature; and in this unseasonable weather the tattered buff satin dress of her cousin, the yellow birch, seems more than ever conspicuous. The tupelo never more effectually asserted its precious whimsicality. The white oak audibly rustles its identity, and the marbled buttonwood-tree hangs out a telltale label from every twig. Look at this scraggly silhouette against the sky over this lichen-painted wall. Who needs the hint of the brown frozen apple lodged among the twigs to call its name? Is it not written in every angle of its eccentric spray, or even in its shadow in the snow? Likewise the elm with pendent nest, the spiral-fluted hornbeam, and sugar-maple too. Who would not know each from a fragment of its bark? Scarcely in a less degree do the linden, the ash, the various willows, oaks, and maples, the chestnut, and the tulip tree assert their individuality and claim our recognition. To the thoughtful observer they soon become familiar, and he can name them all at a glance.

The pendulous button-balls already alluded to, together with the clinging leaves of some of the white and red oaks, are, perhaps, among our deciduous trees the most conspicuous objects which commonly meet the eye in a winter walk. It is not easy to comprehend why these oak-leaves persist in clinging so tenaciously to the parent stem. The wind actually twists them off. The fibrous stubs of their stems may be seen

well into spring still retaining their hold, yielding only to the swelling buds of May growing from their axils, and by which they are literally crowded from the twig.

Though less mysterious, the button-ball is still more remarkable in its tenacity. It is invulnerable. For indomitable pluck and dogged pertinacity I know of no better type; for while the oak-leaves one by one, torn and demoralized, have given up the fight, and flown headlong to the white truce below, the legions aloft in the buttonwood-tree have defied the wildest elements, they have not lost a head nor scarcely suffered a bruise. Indeed their very exposed position seems their coigne of vantage. What a multitudinous and incessant *qui va la!* What an array of tireless sinewy slings! They are more than a match for the north wind's storming tactics. They taunt the tempest; they toss the snow and sleet from their shoulders, and ride the blast as lightly as the petrel on an angry sea. As the storm rages with increased fury and beats them more mercilessly—their clinging tendons now twisted into shreds, and their very stronghold shaken to its foundation—even yet they are not cast down nor dismayed, but only thus dance the more nimbly and defiantly on their perch.

The object of the button-ball in thus bridging over the winter in mid-air has been a puzzle to many, but to me the answer seems more conspicuous than the riddle, in the evident design of protection to the seed.

When we observe a seed provided with buoyant wings, as in the thistle, we assume that it is endowed for flight. When a flower closes its eye and ducks its head in the rain, it is safe to believe that its face does not need washing. I have never tested the matter, but I would venture the assertion that a button-ball picked in autumn and laid upon the ground to undergo the lot of acorn or chestnut, would soon succumb to the ice and slush and become disintegrated, with every vital spark speedily quenched.

Each one of these balls represents a curious concentrated huddle of seeds; and they are not thus snugly packed away for the winter, with the nicest art, tucked up with warm dry chaff, and hung up so securely above their groundling neighbors, for mere caprice. No, the button-balls know when they are well off. They rock their cradles in the tree-tops warmly and securely, until at last at their own sweet will they loosen the snug coverlet and launch their broods upon the soft spring breeze. Thus in May, when the new leaves are putting forth, you may see the

puffy broods pluming their wings in preparation for flight. But it is not until the drooping crimson balls of the new year fairly appear among them that they finally let go their hold; for the buttonwood clock never runs down. The old pendulums remain on duty until the new ones are ready to relieve them.

I know of no other northern deciduous tree which thus swings round the calendar. To be sure, some of the oaks, like the scarlet oak (*Quercus coccinea*) and the pin oak (*Q. palustris*), carry their acorns through two seasons, and are thus seen on the twigs in winter; but here there is a distinction. These must be considered as green fruits; they are not ripened until their second autumn. What sturdy qualities might we not expect from a scion which braves such heroic discipline in its tender years. The acorn has imbibed and husbanded the vigor of the most violent elements, and as the season of its maturity approaches, it has become a very bomb of imprisoned energy.

The nettle-tree, with its sugar-coated pellets, and the hawthorn, holly, locust, and mountain ash, often bear their fruits far into the winter, as the birds well know; and among the shrubs the sumacs, wild roses, sweet viburnum, barberry, black alder, wax-myrtle, and climbing bitter-sweet are similarly conspicuous; also the clambering wild grape and its allied woodbine; but most of these are evidently baited for the birds, and thus are naturally disseminated during the winter season.

The design of the button-ball is not imitated in any of these, nor in any other instance that I recall, save, perhaps, the china-tree of the south, and the catalpa, which I have not observed in its native haunts, but which in its more northern foster-country holds its long cigar-like pods well on towards April.

These white months are the triumphal epoch of the evergreens. When has their varied beauty and character been so accentuated and set off as now in our winter walk! The compact pyramids of the rich olive cedars! the stately symmetry of the pines! Here we are confronted with a low hanging branch; how intricate the spiculated tracery of its silhouette etched with its own needles against the snow! Would you know a treasure of our woodlands not half appreciated? Look, then, at our beautiful drooping hemlock, peerless in grace among the evergreens of the world. Not the boasted Himalayan cedar (*Cedrus deodar*), Chinese cypress, nor the several examples of *Retinospora*, so prized by connoisseurs, can compare with it in the constituents of true

beauty. It carries itself like a queen among them all. The formal arbitrary type of the conifers, so conspicuously adhered to in the well-known examples of white pine and Norway spruce, and which more or less regulates the growth of most of our evergreens, is disregarded or artfully disguised in our hemlock. There is a careless freedom in its drapery and a wild, free, independent swing about its spray which are racy of the native soil, and should win our sympathetic admiration.



A FROLIC IN THE SNOW.

The interior of St. Peter's Cathedral, I am told, maintains an almost uniform temperature throughout the year. In a different sense the pine forest similarly obliterates the seasons. In these "cathedral woods" "with soft brown silence carpeted," and where the pungent fragrance of the trees follows you as from an unseen censer, one may readily forget the complexion of the outer world. Were it not for the occasional reminders of withered orchid pods rising here and there from their broad, twin leaves, or an occasional blackened clump of the extinguished pipes of *Monotropa*, to say nothing of a slight tingling of one's

ears, we might readily permit ourselves to be deceived as to the true season.

The common summer features of the pines seem to have undergone little apparent change. The arbutus, the partridge-vine, and the snowberry show their accustomed thrift. Likewise the pipsissewa and pyrola, whose slender spires of seed-pods suggest the flowers.

The creeping *Lycopodium* leaves are the same as always; the wintergreen is in its element; and the *Coptis*, with its brilliant ternate leaves, never more invitingly betrayed its "harmless gold." It is worth a trip to the woods at any time for one glimpse of this buried treasure. Here may you envy and covet without sin. Press among the yielding needles: open up the damp débris. How the bright strands gleam against the dark brown mould! "Goldthread," it is called. Seek it, my worldling, and cultivate it if you know it not; lay it beside your precious glittering dollar and learn which is the counterfeit! and mend your needy fabric with its generous skein.

By what fatality are these roots endowed with such dazzling brightness, while those of the snakeroot, for instance, which resemble them in form, and which occasionally intermingle with them, are as black as night? Doubtless the wise herbalist of the Middle Ages could have solved the problem in a twinkling.

Following the suggestion of some such hint as these, it was the custom of old to refer each plant arbitrarily to the government of some especial planet, which was thenceforth, it would seem, held responsible for its virtues or failings. Thus we read of the lettuce, for example, that "the moon owns it;" of another, "this plant is under the dominion of Jupiter;" or again, "Cancer claims the herb," or "Venus is lady of it." Another delicate, blushing blossom is a "Mignon of Mars." Doubtless the *Coptis* from its golden roots would have followed in the train of a host of others, "abject slaves to sullen Saturn," as we read in Culpeper, and strange discoveries of Saturnine qualities would have necessarily followed, much as in the case of the coffee-plant, also quaintly diagnosed by the astrological insight of Culpeper. "It is reported," he says, in substance, "to be the berries of certain bushes growing in Arabia. It is said to be insipid and without taste or smell, but being pounded and baked it has a loathsome odor, which is an argument of some Saturnine quality in it, for the propugners of this vile drink affirm that it causeth watchfulness."

The scantiness of vegetation beneath the pines and among dense evergreens generally is well known; and while the pine wood has a limited flora peculiar to itself, plants equipped to force their passage through the meshes of matted needles, the common species habitually to be met with in equally shaded nooks are absent. One might naturally infer that the mischief lies in the dense barren screen of needles, were it not that the matter was set at rest long ago by the discovery of Pliny, who had an interesting theory as to their infertility, showing at least that conifer woods have remained the same through the ages. This antique philosopher lets a little characteristic light into their umbrage. Discoursing upon trees, he affirms, through the quaint "early English" of his translator, that "there is not the shadow of any one tree but either is a kind of nource or a curst step-dame, . . . for without all question the shade of pine-trees, pitch-trees, & firs is no better than poison to all that is within the compasse of it, and kils whatsoever it toucheth"—an authoritative utterance which possesses a special significance, remembering also that it was Pliny who was the first to discover that honey was a celestial crop, "an unctuous gelly proceeding from the starres," also that "twenty-seven pricks of a hornet" would "kil a man." Of bees he announced that the spies "whom they send to discover distant forage, if they be overtaken by night they couch upon their backs for feare lest their wings be overcharged with the evening dew, and so they watch until the morning." Pliny's favorite cure for headache also deserves wider notice. Know then that "the head of a snail cut off with a reed, while feeding in the morning, at full moon, and attached to the head in a linen cloth with an old thrum, is singular good for this malady."

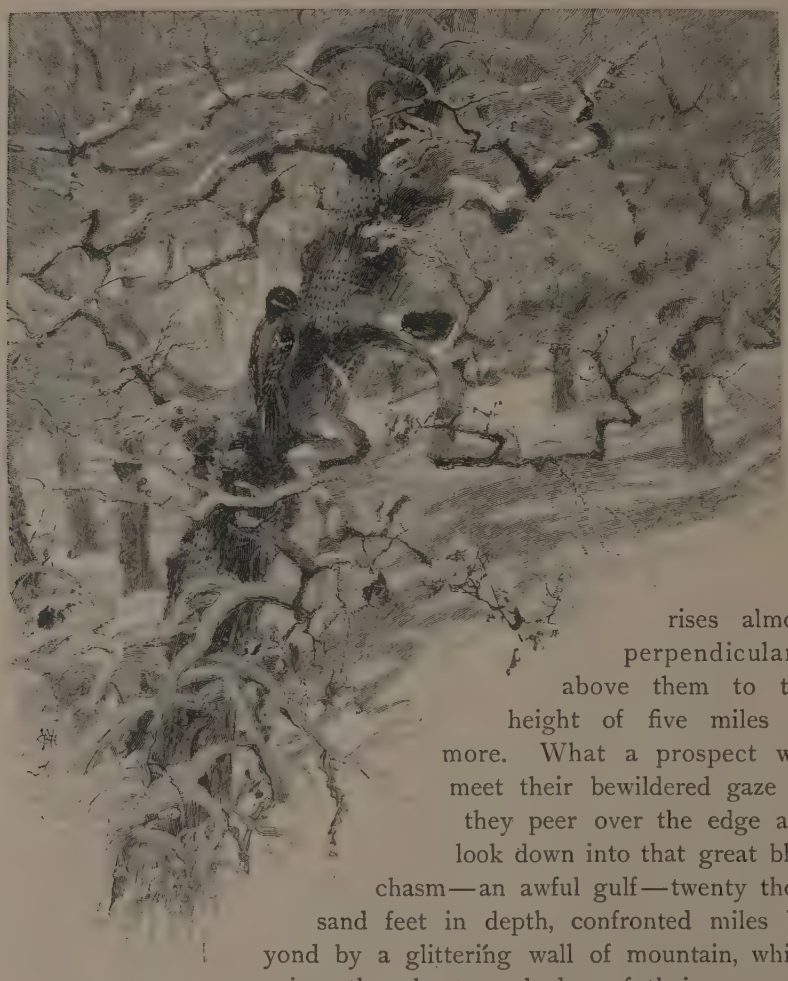
As in the case of the oaks just alluded to—ere I allowed myself to be led astray by Pliny and Culpeper—our pines habitually carry their fruits through two seasons and commonly shed their seeds in autumn. But this would not seem to be an unfailing rule, as botanical works appear to teach. When the pine-cone has reached maturity and is ready for dissemination, the scales, beginning at the base, become detached one by one from their fellows at the circumference of the cone, each overlapping scale thus freeing its neighbor until the loosening process soon reaches the top. The air is thus let into the heart of the fruit, and the scales now expand sufficiently to permit the escape of the seed.

Often on a snowy February day I have heard the woods resound

with the clear sharp clicks of the bursting cones, and on one occasion at least, late in April, standing beneath a pitch-pine tree, I listened to the same lively chorus overhead, and saw the winged seeds flutter about me. All pine-cones, as a rule, have a like sensitiveness to moisture, and will open best in a dry atmosphere. This would seem to explain why, in the humid climate of England, whither our pitch-pine has been extensively introduced, the cones often continue closed for several years, while, on the other hand, two of our imported species, the Austrian pine (*Pinus Austriaca*) and Scotch pine (*P. Sylvestris*), have never yet learned to contain themselves in our drier climate. They are frequently, with us, the first couriers to announce the approach of spring. A warm southern February breeze occasionally starts up a lively Austrian salute among their strongholds in our parks. I have brought these cones home by the pocketful from my winter walks in the suburbs, and enjoyed their lively snap and jumping hubbub on my mantle as welcome reminders of the snowy woods. The click of an Austrian pine cone may be heard fifty yards.

Here we bid the pines adieu, to walk out again upon the crunching snow, following along the corn-field's edge, where the zigzag fence is besieged with fantastic peaked drifts, overtopping all but the highest rails. How alpen-like their overhanging peaks! how blue and vast and limitless their shadows! Lie down upon the snow and shut out the distant trees, divest yourself of your physical identity, and look along at this beetling range as an ant might do. What need of Switzerland, of Jungfrau or Matterhorn! Compared to these the mastodon is but a midge, and man learns his true status as a constituent of the universe. At this focal range I have now only to will, and "I become a transparent eyeball; I am nothing; I see all." An inch of this white slope of drift becomes a mile, each separate wavelet which rises to an abrupt edge here and there upon its surface becomes a bold crag with a deep gulf at its base, and every interposing furrow a yawning cañon. Here a delicate spire of some weed, no larger than a pin, rises above the surface. I break it into a half-dozen short pieces, and arrange them upright in a row upon the glittering slope. How quickly do they follow up the hint! how cautiously they seem to pick their way in the vast wilderness of snow! A party of alpine climbers remotely seen move apparently no faster than these, and make no greater figure in the landscape. They are now far up on their ambitious journey. Presently they will reach the edge of

yonder abrupt precipice, and will be obliged to retrace their steps and follow down the declining slope upon its further side, where again their course glides upward towards the steep crag of the summit, which now



THE BULLETIN-TREE.

rises almost perpendicularly above them to the height of five miles or more. What a prospect will meet their bewildered gaze as they peer over the edge and look down into that great blue chasm—an awful gulf—twenty thousand feet in depth, confronted miles beyond by a glittering wall of mountain, which receives the phantom shadow of their own and neighboring alps upon its perpendicular face! Below in the depths of the abyss, too distant for the ear to detect, almost too remote for sight, the undermining torrent roars beneath vast glacial fields, and crystal caverns more wondrous than any realm of fairy

lore, miles in height, set with scintillating diamonds, conceal the rushing flood. Here are diaphanous prisons where the encaged sunbeam seems to flutter beneath the filmy pellicle, and every partition, nook, and corner is rimed with brilliants or fringed with crystal feathers. Here are prismatic pinnacles and stalagmites and—

But what is this? Some enormous object falls precipitately upon the slope, and threatens to annihilate my alpine party at one fell swoop. It bounds and plunges and rolls to the bottom of the alp, incasing itself in snow, and leaving a long and continually widening valley in its wake. A meteorite! Forgetting that this snowy ball is at least five hundred feet in diameter, I reach out and grasp it in my giant hand, break it open, and disclose the nucleus at its centre. No, it is not an aerolite. It is only a prosaic hickory-nut, which has thus broken in upon and dispelled my pretty fancy, and thus brought me back from alp-land.

Looking aloft upon the jutting rail, two shining black eyes look down at me, and a rollicking snicker wakes the echoes from the old rail-fence. The squirrels in these winter days are mostly buried snugly in their dens, and wrapped up in their furry tails, but some enterprising individuals are always abroad save in the very severest weather. Be off, you rascal! I am a harmless ant no longer!

These tiny furrows, each with its snowball at its lower terminus, may frequently be seen after a fresh snow-fall on steep slopes or drifts, and usually at the centre there will be found a seed, berry, nut, or what not which was the original cause of the phenomenon, and whose progress may easily be detected in the evidences at the uppermost end of the trail.

I remember once in one of my winter walks coming upon a drift directly under a projecting fence-beam, where the snow was striated as if with a comb from summit to base. There had been a light fall of snow over a hard crust, and the beginning of each trail appeared as a succession of dots indicating as many bounds of the falling objects, each at length forming a clean-cut furrow to the base of the drift. In this case the descent had been so easy and precipitous that the impetus of the original revolution of the nut had been maintained throughout, resulting in a disk-like form of snow two inches or more in diameter, with the nut perfectly visible at its centre.

In the low fallows among the wiry sedges you may observe the fresh-fallen snow decorated here and there with dainty rings, as true as if

marked with a compass, each like a fairy circle surrounding some isolated stem. I have seen them by the hundreds upon the snow as well as upon the sand-dunes at the sea-shore, and they were pretty mysteries until the analytic eye detected the revolving wind-blown stylus of grass blade inscribing with its wiry tip. Here is the complement of the pendulums that swing aloft in the buttonwood-tree. There the seconds are recorded. Here is the dial whose shadow marks the hour.

The eyes of the observant winter walker are often irresistibly focussed on the snow. Its exquisitely sculptured surface, with its endless telltale testimonies, becomes an incessant source of wonder, amusement, and instruction.

"The snow is the great betrayer." Its billows, crescents, vales, and drifts, its bare-blown sweeps and sportive eddies! what are these but a perfect footprint, a mould, a seal of last night's whirling storm, every subtlest expression of the wind retained and portrayed — the very image of old Boreas cut in glittering cameo, instinct with all his wild yet kindly caprice—the rigid overhanging brow, the playful smile and dimple? Yes, the snow is a great revealer. This white page is full of interest if one cares to read. It is alive with furry news not to be gathered at any other season. What a nervous, eccentric, racy vernacular have these hardy little Arabs of the snow — the mice, the squirrels, and the birds! Their place in the wild community never seemed so spiritedly manifest as now. How telling are their touches! A terse and graphic art indeed!—a canto in a single couplet, a chapter at a touch of quill. Verily this esteemed contemporary has a busy lot of reporters. It is mostly, to be sure, a nocturnal chronicle, but publishes a fresh postscript by sunrise every morning, and you will find that nothing has escaped that wide-awake night editor. The most trivial event of the hour, whether in park or swamp, or along back fence or corn-crib, has been jotted down. Has the chipmunk sniffed the moonlight from her door-way — that sniff is here. Have two deer-mice touched noses between the pickets of the fence—you may confront them with their telltales to-morrow. Here are the records of the doings of bird and furry folk, who until now have followed their pleasure in the shadows without a witness. Now we may see what company they keep. Here are paths of innocence and peace — some little field-mouse on a cross-lot visit to his neighbor, perhaps his mamma, over at the old homestead in yonder stump, or a quest of forage from the withered grass near by.



A MOONLIGHT TRAGEDY.

All over the meadows and pastures these pretty trails are to be seen criss-crossing in every direction, like a railroad-map with junction stations at every rock and tree and stump. They are the quaintest and sprightliest touches to be seen on this white counterpane. "Stitches in the coverlet," they have been aptly called, with their double dotted row and tail mark like a seam between. It is a rare thing, however, to

catch the little seamstress at her work. These bead-eyed folk are mostly abroad at night.

What a lively pictured record they leave behind them! What pulse-beats full of living story! Here is a trail that makes a curvet up the side of a neighboring drift, and returns in a series of two or three quick, decisive jumps — a surprise, perhaps, or was it play? — so impulsive and recent that you can almost catch the last whisk of a retreating tail in the hole beneath the stump.

Here are blurred beaten tracks to a pile of rails hard by, trails from every side, in single file, by twos, by threes, and whole families together. A favorite winter resort of our little seamstresses, with the door-yard all about scalloped and embroidered with their dainty filigrees. What a scene of squeaky gossip in the moonlight! What pretty testimonies have we here! Cotillions! feathery quadrilles! What were the little creatures doing to have left such witness in the snow, trotting about in circles, forward and backward, two rows together, balance corners, and all hands round! What a frolic in the snow! I have seen the snow-birds at some such play as this, finishing with a summer bath in the feathered rain.

A lake has been likened by some poet to a mirrored world, "where strong on weak, cunning on simple, prey." The snowy field affords a no less suggestive parallel. There are paths of innocence and peace, it is true, on every hand, but here also, alas! is the mark of Cain. Perhaps that squeaky convocation beneath the wood-pile last night betokened more than idle gossip, after all. Look! Following along here upon one of these more isolated trails we discover a large fluffy hollow in the snow, with a red stain in its midst. A graphic picture this of one of winter's nocturnal tragedies! The forceful imprint, the drop of blood, the absence of any returning line of footprints, and the suggestive interval between the abrupt end of the trail and the deep hollow in the snow — how plainly do they tell the story of the surprise! of the petrifying glare of eyes from the shadows, of the startled, hopeless leap for life, and the deadly swoop of wings from the neighboring tree, the vantage-ground of the owl!

But even owls must live, and with such a festive board as this spread out incessantly before them, it is not difficult to see how they, at least, bridge over the winter, and keep their phosphorescent fires aglow, while

"The foodless wilds pour forth their brown inhabitants."

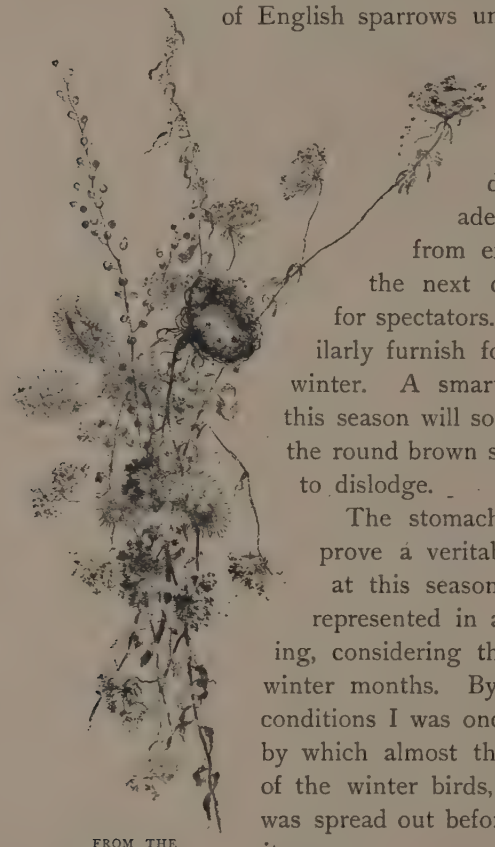
With the frozen earth as hard as rock and buried deep in snow, and its garners locked in ice, one may naturally wonder where these multitudinous little mouths of the wilderness find their food. White buntings and snow-birds are driven to farm-yards, the jays and even the quail are glad of the sweepings from the barn floor, and are grateful for crumbs from barracks and corn-crib, all betokening the season of dearth. To be sure, many of the mice and squirrels have anticipated this white famine, and in a measure provided against it, as the chipmunk with his hoard of hazel-nuts and shell-barks, the deer-mouse with his bin of beech-nuts nicely shelled. But even these, and many of the winter birds especially, would often fare hard, indeed, were it not for the numerous weeds and other plants which, though dried and withered, have remembered their needy friends, and still hold their remnant provender of seeds above the snow.

A weed has been described as "a plant whose virtues have not been discovered." Many of our commonest pests in the way of weeds now redeem themselves, and seem to show an adequate reason for their being. The rag-weed is a conspicuous example. See yonder eager troop of goldfinches and snow-birds — how they revel in the feast among the withered stems! Rag-weed, hog-weed, bitter-weed, it shall be called no more, but by its rightful and less ignominious title, *Ambrosia* —ambrosia, food for the gods! "It must be the food of the gods, if of anything," says Burroughs, "for, as far as I have observed, nothing terrestrial eats it, not even billygoats." Of course he was alluding to the plant proper, and was not thinking of its winter provender.

With the insectivorous birds, such as the nuthatch, the brown creeper, golden-crested wren, and woodpecker, the food supply is not so materially affected by the deep snows. Their tables are spread aboveground, and nothing but a freezing rain-storm which incases the branches in ice can lock them out from their larder. In the loose scales of bark of various trees, with their numerous tidbits of tufted spiders' eggs, beetles, chrysalids, and various larvæ, there is alone an abundant harvest. Every dried leaf among the branches is explored for the possible and probable cocoon; the clusters of eggs of the apple-tree moth are eagerly sought among the orchard twigs; and every hanging cone upon pine or spruce is probed for spiders by hundreds of hungry bills.

I once observed a chickadee thus engaged among some hemlock

cones, and in the act he dislodged a number of their remnant winged seeds, which, though an insect feeder, he eagerly pursued and picked up on the snow. Following up the hint, he afterwards repeated the operation again and again, jumping on the slender branches with as much gravity as such a light-hearted little puff could command. There was soon a goodly spread upon the snow, with which a posse of English sparrows unceremoniously made free, and soon monopolized, but none of them seemed to possess wit enough to replenish the spread, which they had evidently witnessed, and the chickadee doubtless learned wisdom from experience, and was careful on the next occasion to keep an eye out for spectators. The cones of the alder similarly furnish food for the birds through the winter. A smart shake of an alder bush at this season will sometimes pepper the snow with the round brown seeds which the wind has failed to dislodge.



FROM THE FENCE CORNER.

The stomach of a seed-eating bird might prove a veritable herbarium to the botanist at this season. The variety of seeds thus represented in a single meal is often surprising, considering the natural deprivations of the winter months. By a fortunate train of weather conditions I was once favored with a phenomenon by which almost the entire vegetable bill of fare of the winter birds, at least in the way of seeds, was spread out before me—brought to my feet, as it were.

Walking upon the firm and polished snow-crust, picking my way along a rail-fence at the foot of a steep, sloping pasture, I suddenly aroused into flight a flock of small birds from behind the bulwark of drifts with which the fence was hemmed in and partially buried. So loud was the united flutter of their wings that it at first suggested the whir of a partridge, until I saw it dissipated in the flock

of smaller fry above the edge of the drift. They proved to be, as I remember, mostly snow-birds, white buntings, and goldfinches, though doubtless the cedar-birds, winter-wrens, tree-sparrows, pine and purple finches, were also among them. Their noisy flight was the signal for a general alarm all along the line, following the fence for several hundred feet, each zigzag corner sending up its winged bevy to perch and twitter upon the upper rails. Almost every projecting beam showed its chirruping sentinel.

Interested to discover the secret of such a great feathery convocation, I crept up to the edge of the slippery drift and looked over. Beyond the fence rose the steep, white, glistening slope of the pasture, a distance of a furlong or more, its surface mottled with its brown withered vegetation. Following the rambling rails on either side were drifts of the most fantastic form, now and then almost peering above the fence riders, and between them ran a winding valley, in which the old fence seemed to be walking knee-deep in snow. It needed only a second glance into this hollow, whence the startled flocks had flown, to understand its attractiveness for the birds. Its depths were fairly littered with the choicest kind of allurement. The very cream of the pasture had flowed into this trough. It was the hopper which had received the entire wind-blown tribute of the weedy upland that looked down upon it, and of the overhanging woods far up the slope. Here were windrows of various seeds which had been dislodged from the weeds and trees and blown along the glassy snow to be caught in this convenient bin. The small goblet-shaped hollows around the projecting grass-stems were full to the brim with their good cheer, and the deeper vales and gullies were marked out everywhere by their brown meandering lines of intermingled chaff and seeds, often to the depth of two inches or more. A happy valley and a land of plenty, surely!

A single handful of this grist taken up at random presented a surprising variety of elements, offering a wide choice for the most fastidious bird appetite. Curious to test this question further, I followed the fence for a long distance, occasionally sampling the meadow crumbs, and continually discovering some new ingredient of fruit or seed.

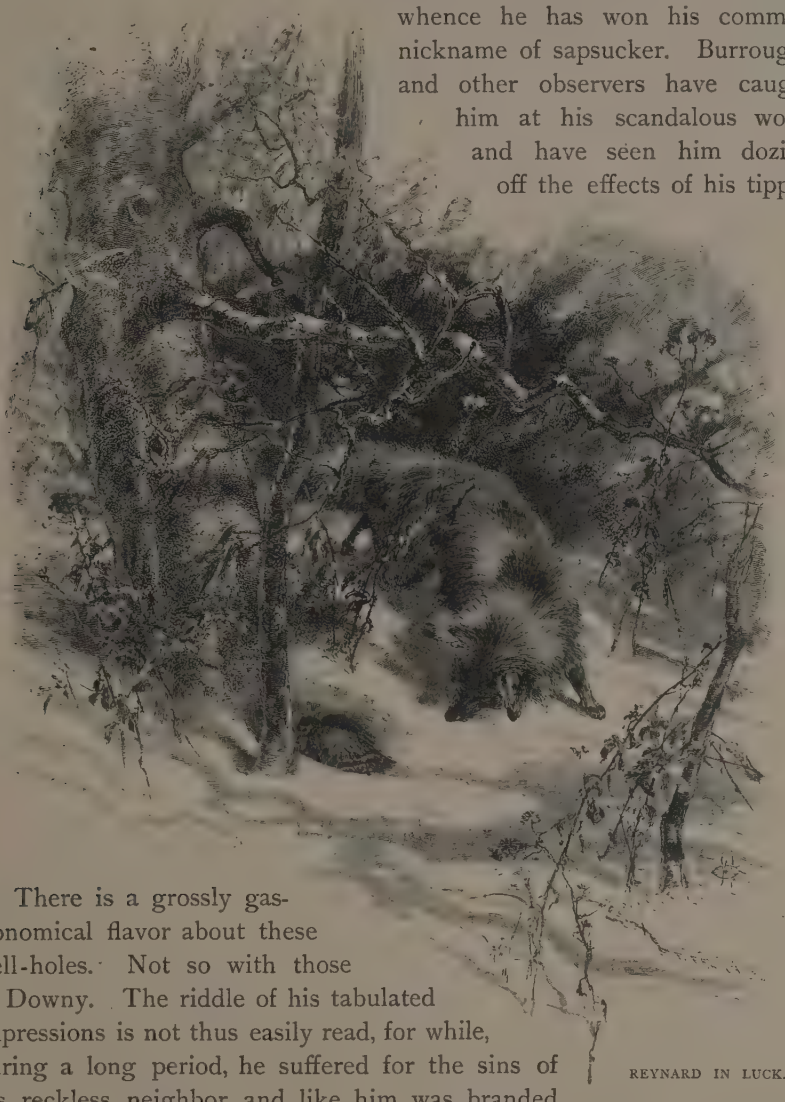
Even the powdery chaff which I blew away in order to better reveal the larger morsels, proved to be the fine seed of various grasses and sedges; while among the more conspicuous which remained I noted the following considerable list, not to mention others which were then be-

yond my limited botanical knowledge. The seeds of the alder, birch, hemlock, rag-weed, bur-marigolds, and wild-carrot were, perhaps, the most numerous and general. There was an exclusive colony of dried grapes assembled in one particular corner, doubtless laying their plans for a future arborescent monopoly of the rails in their vicinity. I found, also, numbers of larch seeds, both with and without their wings. Stag-horn-sumach, poison-ivy, ash, and hop-hornbeam representatives were frequent, and one chaffy handful, downy with golden-rod and aster seeds was lit up with a bright scarlet berry of black alder, like a tiny live coal in a bed of ashes. There was an occasional withered poke-berry to be met with, also fruits of sheep-berry, *Ampelopsis*, juniper, and haw-thorn. Another sample challenged my audacious familiarity with the fangs of a *Cenchrus* bur — the spiny fruit of the hedgehog grass, and still another was pretty well doctored with the poisonous seeds of stramonium, or jimson-weed, a line of which followed along the base of a drift like an open trail fuse of blasting powder leading up to a drill-hole well calked with chaff. I recall also a few samaras of the tulip-tree, some hazel-nuts, oats, foxtail-grass seed, as well as several other queer diminutive forms which were unknown to me at the time, and which I cannot now identify from memory.

I sometimes wonder who shall be the first true interpreter of the hieroglyphic of the woodpecker on the apple-tree. Every one has seen these punctured rings circling the orchard trees, and much has been written concerning them. But as yet I feel that the inner depths of these quaint pits have never been sounded. True, it is claimed that a quest for food explains their presence, but if I were to trust the pleasant counsel of my inward eye, I should fancy that this carefully punctuated inscription had a deeper significance — that this old sculptured apple-tree was the bulletin of the birds, and the downy woodpecker their appointed scribe. See how curiously they follow the mystic circles — a bluebird, and now a nuthatch or a chickadee. For fodder? perish the thought! They are messengers from the chippering colony in yonder evergreens, and they gather the latest news from featherdom.

In alluding to Downy as the scribe of the birds I speak advisedly. I am well aware that the credit of these perforations is usually given to another bird, an allied species, the yellow-bellied woodpecker, for he, too, is a frequent cause of these punctured rings. But he is not worthy to be called the scribe of featherdom. He is a convicted vandal, and more-

over, it would seem, a toper withal. He has been seen in the act of mutilating trees until they bleed, sinking rows of deep wells into the pulsating bark, and sipping at the wounds, whence he has won his common nickname of sapsucker. Burroughs and other observers have caught him at his scandalous work, and have seen him dozing off the effects of his tipple.



REYNARD IN LUCK.

There is a grossly gastronomical flavor about these well-holes. Not so with those of Downy. The riddle of his tabulated impressions is not thus easily read, for while, during a long period, he suffered for the sins of his reckless neighbor, and like him was branded and hunted down as a "sapsucker," and thought to be the chief author of all the mischief of the bleeding trees, the injustice was at length dis-

covered, and, I believe, fully demonstrated. Downy was honorably acquitted, and has since taken his rightful place as one of the recognized friends of farmer and fruit-culturist. In no sense can the marks of his bill be called wounds: they rarely penetrate beyond the outer scurf-bark of the tree, and here are more often a decided benefit than an injury, as any one may observe who will take the trouble to watch him at his work — not with the confessed short-sighted vision of a certain farmer with whom I once talked on the road, and who told me with evident truth how he had shot his robins by the score to save his cherries, and repented too late at the disclosure of their stomachs filled with wormy fruit. He saw the mutilated cherries hanging everywhere among his trees with their cheeks bitten off; he saw the mutilator; that was enough, and indeed would have been enough for almost any one. His story would have had more weight, it must be confessed, if he could have produced ocular proof. I suspect the robins occasionally made a mistake and mutilated a perfect cheek, as I am certain they are wont to do in the instance of the strawberry. This same sort of reckless assumption, however, has brought down thousands of our downy woodpecker, a single charge of the gun-shot inflicting more actual damage to the tree than the whole tribe of harmless bills could possibly have done.

Did you ever watch the downy woodpecker in his visit to the apple-tree? See how with quick, short slides, rather than jumps, he moves from place to place. It is a strange motion; there is purpose in it, and yet it seems to lack volition; now to this side, now to that, now dropping vertically downward for a few inches, without a change of feather or apparent movement of muscle, almost as though the puppet of an extraneous force. All the while he has been tapping gently on the bark with point of bill, intent and with design. Here he pauses, and seems to brace his tail firmly against the tree. He has struck a nugget. There is a brief tattoo, and in a second he is again motionless, with a clean round hole in the bark at the tip of his bill. His throat now swells with a dainty tidbit, and he is off again, dodging about as before. Again and again you may observe this little episode, but you will notice, too, that at these times the punctures are made at random, and are not confined to any continuous line or spot upon the tree. We will take a close look at the hole he has just left. With the blade of a penknife the loose scale of bark is easily dislodged. Turning to

its under side we discover a concave hollow immediately around the hole, and a corresponding concavity at its former juncture with the tree. The remains of a silken cocoon are here to be seen, and you may be sure that it is empty.

Much wonder has been expressed at the precision with which the Downy thus locates his hidden quarry; and it has been asserted by some ornithological writers who ought to have known better, and doubtless would, had their entomology kept pace with their ornithology, that the point of puncture was decided upon by the "movements of the startled grub," or by the scraping sound of its jaws. Now the latter may, and doubtless does, occasionally serve the bird as described, in detecting borers which drive their tunnels beneath the bark of dead or dying trees.

The vibrant property of wood is nowhere better illustrated than in the transmission of the sound of the minute teeth of borers. Have you never heard the grinding in the dead, dry trunk of the pine? It is like a busy carpenter-shop in full blast. I remember, in a recent walk in Conway woods, that such a tree audibly announced its presence fully twenty feet in advance of me. Sawdust poured out from hundreds of apertures, and on laying my ear against the trunk and closing my eyes, I seemed to be in the midst of a metropolitan Bedlam — a whole city block behind in its contract and rushed for the finish, with hammers and planes and chisels, in wild echoing confusion. I could hear the saws and augers, gouges, derricks, and pulleys, almost the hurried foot-falls — indeed, everything but the profanity of the workmen. And yet a single one of these disclosed in his hiding-place was scarcely larger than a brad.

But the tenant beneath the bark of the apple-tree is not a wood-borer at all. It is the caterpillar of a small moth, whose earlier existence has been spent within the core and pulp of some rosy apple, now a windfall at its door. On reaching maturity it has emerged and sought this shelter beneath the bark for the purpose of making its cocoon. In preparation for this, the insect commonly gnaws a hollow beneath the bark, and thus to the alert ear of a woodpecker at this time his whereabouts might easily be disclosed. But this noisy period lasts but a day or two, after which the larva changes to the quiescent pupa, and lies as though in its tomb until the spring.

Yet now in midwinter how quickly and deftly does the downy wood-

pecker disclose its hiding-place, and search the cavity with that barbed tongue! How easily he also annihilates the theory of the betraying sounds of the insect! for these pupæ are as motionless as though frozen or dead. No, these nuggets are evidently disclosed by another test — by percussion, just as the tap of one's finger-nail may detect the slightest blister in a veneer. Even the penknife handle will sometimes locate these hollows beneath the apple-tree bark. If it were my sole business, as it is with Downy, I believe I could easily construct a prospecting hammer that would rival his own.

But these, as I have said, are not the only evidences which this bird leaves in the apple-tree. Presently he will forget his appetite, and flying to his neighboring bulletin-tree, take up the tally he left off yesterday, adding his fresh item to the dotted record. I have seen him thus quietly at work on two occasions on an apple and a beech tree, but these holes disclose no quest of food. They do not reach the sap, and I am at a loss to explain their presence on any other ground than pure philanthropy. I have seen similar dotted rings on the trunks of cherry-trees, sugar and swamp maples, slippery-elm, beech, ash, and spruce trees, but fancy that most of them savor of gastronomy.

The botanist need not hibernate during the winter. The fields invite him to their vast herbarium, in which the dried specimens still maintain much of their former beauty. If he is unfamiliar with the winter aspect of his favorite plants, he would certainly be surprised at the ease with which he recognizes many of their withered phantoms. Take the golden-rods, for instance; there are at least ten of them which now occur to me, commonly to be met with in this section, which are positively as distinct and individual in their winter tangle as in their more verdant and golden days. The *Solidago arguta*, *altissima*, *cæsia*, *lanceolata*, *Canadensis*, *squarrosa*, *nemoralis*, *bicolor*, *Muhlenbergii*, *latifolia*, embracing, as they do, the various anatomical types among our forty odd golden-rods, reveal as much of their true underlying character in the winter landscape as at any former period of growth, and I had almost said more so, on account of their increased accentuation against the bright snow.

The woods, too, have much of interest to show in the expectant hopeful attitude of Nature evinced everywhere among the twigs of bush and tree. The alders stand ready to shake out their tassels on the first spring breeze; the dogwoods have made up their spring packets al-

ready, and their vernal flower clusters may easily be discovered beneath the bracts of their close-wrapped buds, a few of which are pictured among our "winter twigs," at the base of the border. Likewise the ter-



MATERNAL COUNSEL.

minal buds of hickory and horse-chestnut, if carefully dispossessed of their frost-proof downy scales, will reveal their exquisitely folded leaves and flowers.

I am indebted to a winter walk for having let in a little needed light among the horse-chestnut branches, and for having opened up a possible excuse for what had always seemed a puzzling misnomer. I cannot find that any adequate reason has ever been assigned for the christening of this tree, but I have chanced to discover a full indorsement — a seal of authority, as it were — imprinted everywhere among its branches. To be sure, we have the horse-nettle, horse-balm, horse-gentian, horse-weed, etc. — a whole herd of them — this prefix being commonly applied in the botanic as well as in popular vocabularies to the larger and coarser species among almost any given genus of plants: an epithet therefore, of grossness, though why *horse* rather than ox or elephant is not so clear. Every one is familiar with the cicatrix or scar left on the twig of the horse-chestnut at the fall of its leaf — a triangular seal with a row of elevated dots around its edge. These scars may be seen conspicuously on the winter twigs, in opposite pairs, particularly towards the branch tips, the last couple hugging close to the base of the varnished terminal bud. In the normal branch this terminal bud is perpetuated year after year, continuing the direct line of the main limb, lateral branches being added in opposite pairs at intervals. If, from any cause, as frequently happens, this bud becomes destroyed, the two branches which proceed from the lateral buds at its base incline towards each other to neutralize the vacancy, each thus acquiring a curve at the fork. We have only to find such a double branch-tip to appreciate the well-merited significance of the name horse-chestnut. The resemblance to the leg and foot of a horse here shown is quite remarkable — the bend of the hock, the hoof, and all, even to the seven nails of the shoe, the row of dots already alluded to, which are really the diminutive scars of the nervures of the sevenfold leaf, now falling into line very significantly. If with a sharp knife we now cut off these twigs just below and following the edge of the scar, the curious resemblance is still further enhanced by the separation from the surroundings not only, but by the disclosure of a surface which in shape and markings seems almost patterned after the sole or frog of a horse hoof. I have given a pictured hint of such a detached twig, and it is not exaggerated, in fact does not really do justice to the curious freak. Of course there is some choice in the subjects, but a good specimen is well worth a careful search among the forked branches.

Of curiosities in the way of twigs, the low-hanging boughs of the

hickory afford another interesting example. The snow beneath the shag-bark-tree is sometimes strewn with short fragments of branch-tips, and on examination these fractured ends appear to have been cut off as with a file. Looking among the boughs we may find many of the twigs similarly cut, but still intact, awaiting only an exceptionally sharp breeze to dislodge them. At a point a foot or more from the end many of the smaller limbs are seen to be encircled with a clean-cut groove extending deep into the wood, and thus completely girdling the branch. Above and below this cut the bark is marked with transverse scratches, as though the trial marks of a chisel seeking for a suitable place to begin operations. In some instances the terminal wood beyond these girdles is yet green and vigorous, as is proven by the succulent leaf-buds. In others it is quite dead, and in rough weather snaps easily and falls to the ground.

All this is the work of an artful little beetle called the girdler, known in winter only by her works, it is true, but in August a visit to these trees will reveal the skilful pruner as pictured in our illustration, circling the twig, and with her sharp teeth sinking her trim groove deep into the wood.

An examination of the dead twigs upon the snow explains the object of her pains. The dead wood is furrowed and often hollow with tunnels of the little borer, which has here found its food. The result of the girdle, of course, is to kill the branch beyond. It is made at a season when the wood is pulsating with sap, enough still remaining to perpetuate its life for some weeks subsequent to the semi-amputation, and occasionally, I am led to believe, leaving an overplus of energy sufficient to permit a brief show of green in the following spring. Herein we see the wonderful instinct of the insect. The eggs are laid in the amputated portion of the twig and soon hatched, the young larvæ requiring the succulent fibre. During the second and third year, on the other hand, they demand the dead and dry wood, and the parent thus anticipates and insures them proper food. Thus, on the year following the girdle the branch dies, and, I believe, in the third year snaps off and falls to the ground.

I have also discovered another remarkable pruner among the larger hickory branches, but unlike his neighbor he conceals his art, pruning the branches under the bark and leaving no outward sign. You clutch the limb — let us hope, not with reliance for support while aloft in the

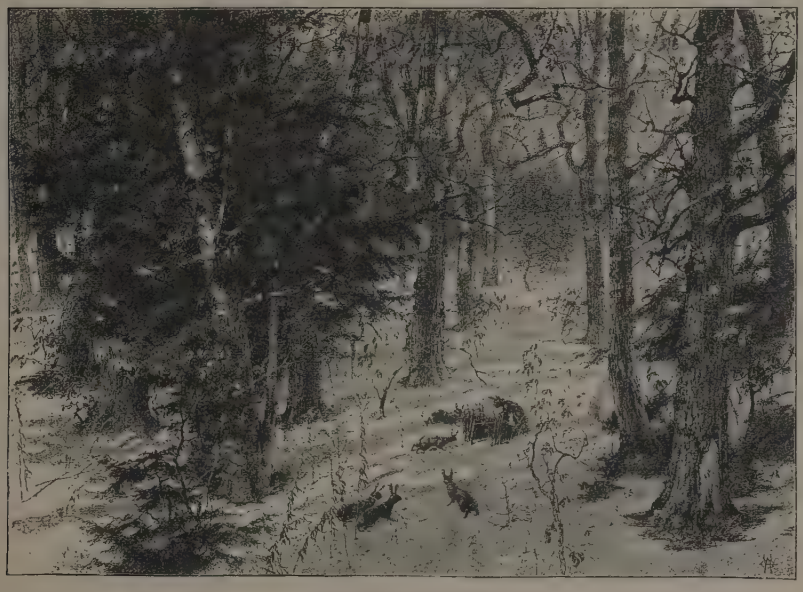
tree climbing after the shell-barks — and it snaps asunder, disclosing a smooth cut directly across the wood, revealing at its edge the opening of a flat burrow which wanders off circuitously beneath the bark. Somewhere hidden in this burrow may be found a small whitish flat grub, presumably the larva of a beetle. This larva evidently feeds upon the new wood just beneath the bark until nearly full grown, or until arrived at a stage of growth when it demands dead wood as food. At this period it sets to work to amputate the limb, which it does by turning abruptly across the grain, and devouring the fibre to the circumference of the bark on every side, thus leaving a clean, concealed fissure almost like the work of a fine saw. The body of the borer at this stage is very thin, and the cut itself would scarcely permit the passage of a penknife blade.

To the depredations of these two vandals the symmetry of our hickories has fallen a victim. I have seen the shagbark-tree visibly shaped by their continual pruning, and, as in the case of their human prototypes who wield the knife in the name of artistic arboriculture, the result is seldom to their credit. The continual curtailing of the annual terminal shoots drives back the vegetative energy to the lateral buds, and the lower portion of the tree where the operations of the insects are often especially confined, thus becomes contracted, shocky, and sometimes unsightly with dead wood.

I remember one winter starting up a shrike beneath a hickory where the snow was littered with these amputated twigs of the girdler beetle. I also observed that many of the twigs were splintered and crushed, and fancied that the bird had in some way learned of their lively contents and had been shelling out the plump kernels. Upon a low thorn-bush near by I chanced upon an old time haunt of the bird, which bore evidences of a recent wistful visit — his autumn butcher-shambles now fully revealed in all their grim suggestiveness, almost every thorn upon a certain branch still bearing some remnant of a murderous feast — here a grasshopper, there a beetle or the skull of a field-mouse, and I remember well the bleached skeleton of a small bird, presumably a chickadee, with the thorn projecting from its eye cavity; and I remember, too, how I yearned for the mounted specimen of that shrike, content to forego for all time the "heedless, unfrozen melody" of his discordant voice.

These snow-bound winter days often crowd the birds very close for food, and they are driven to all sorts of expedients to obtain the modi-

cum of fuel necessary to keep their little corporeal furnaces agoing, and this, too, at a season when those interior fires are most in need to resist the "hard dull bitterness of cold." The ruffed grouse is often forced to bank his fires beneath the snow, burrowing deep into the drift to smoulder through the blustering night. After a fresh snow-fall it is not an uncommon thing for the winter walker to come upon these evidences of the bird's sagacious instinct. Sometimes, too, similar burrows will be found leading to some patch of partridge-vine or other winter feeding or budding-ground.



A WINTER EPISODE.

A certain youth of my acquaintance once had an interesting experience with a grouse which he was lucky enough to surprise thus feeding, presumably upon some alder buds beneath the snow. Stealing cautiously upon the burrow, within which nothing but the bird's tail was visible, he grasped that convenient member quickly and firmly with both hands, drew the bird forcibly from her retreat, and was about to lay more violent security upon her, when with a sudden flutter she took wing, leaving with him only the token of her fan to quell his warm excitement and serve as a memento of the occasion. I have often had this incident

in mind when happening upon these occasional snow tunnels. I once followed one for a considerable distance, breaking in the snowy roof in continual expectancy, only to lead up to an exit a few feet beyond. There was no quest of food indicated, and but a single track, thus showing that the excavation had not served as a rendezvous, rather, I fancy, as a convenient resource in a dire emergency, a moment of panic when the shadow of a hawk was flitting on the snow.

Often, no doubt, these snowy tunnels are thus used, but even as a refuge they are not without their perils. It is a lucky day for Reynard when he follows up a trail to one of these hiding-places or feeding-grounds beneath the drift, as doubtless occasionally happens.

I have seen the marks of his artful, wily visits among the alders, every footprint instinct with stealth and cunning — touches so alive and nervous, that they seem to picture the living fur hovering above them.

In the footprint of a fox as in that of no other animal, you may read the character of the roving mind. This is no mongrel dog that has been running here in the snow. There is nothing plebeian in this signature, but the very insignia of self-confident valor and defiance, the mark of Nature's own wildling blue-blood. These alert imprints seem to sniff the air, and even in the most loitering touch you may read, "Qui vive! Poor lame cur. I laugh at you. 'Bear home my brush,' indeed! Ha! ha! certainly, and welcome — here it is, come catch it."

The footpads of the hare have dotted the snow on all sides, four in a set, at intervals of two feet or more. How many realize just how Bunny writes his well-known autograph. On examination of his imprint it will be seen that the foremost or more widely separated pair of impressions are really those of his hind-feet. Thus, in running, the fore-feet are planted near together, or sometimes one directly in front of the other; the hind-feet then pass outside and about five inches in advance of them, and then follows a jump which may vary all the way from two to nine or ten feet. The interval between these imprints, moreover, affects their shape correspondingly. In the longer leaps the dots are round and decisive, often less deep, and plainly made by the tips of the paw; while in the lesser intervals, when "the hare limps awkward," you may readily detect the proof of the loitering course in the shape of the bristly sole, often distinct even to the end of the heel. I once observed these latter under conditions which gave them an amusing significance. It was during an early snow late in autumn, when on a round

among my traps and snares — those barbarous relics of my destructive boyhood; how deeply would I regret them did I not realize how much else than furry or feathery game they caught for me. Around a big box-trap which had housed many a wayward "cottontail," and which for some reason had now held its alluring apple untouched for many days, I observed the snow cut up with footprints. They were obviously those of the hares, and there was no mistaking the fact that many of them had here made their first essay on the snow. There was the mark of innocence and unsophisticated simplicity — an eager, almost tempted curiosity so manifest, that I plainly owed my empty trap to naught else than the decisive touches of parental authority or maternal counsel, so conspicuous among the footprints on all sides. What a family of these furry babes of the wood! Their evidences around the entrance of the trap and about the spindle at its back spoke wonders, and brought vivid pictures of that council of pricked-up ears. But there was one mark in the snow which puzzled me: a trough or hollow sweep exposing the dry leaves here and there, and extending about two feet away from the entrance to the trap. I could think of it as nothing but a token of heroic discipline — of a heedless or rebellious offspring which must needs be dragged forcibly by the nape of the neck from a scene which tended to prove its ruin. He "was made an example of," as the disciplinarians have it, and evidently to some purpose, as none of that youthful family ever entered *my* game-bag.

I have observed similar episodes imprinted in the snow about my other traps and snares. Once I found a twitch-up or spring-pole snare neatly sprung, without its quarry, and the bait missing. Now I had calculated that the latter must be taken through a little window in front of the surrounding pen, and about which a wire slip-noose had been artfully arranged. But a keen-witted witness in a certain hollow tree near by had devised a better method, and entered by way of the roof, after first removing its protecting twigs — wily, sharp-nosed, black-eyed, long-haired, bushy-tailed rogue that he was. How well I knew him by his simple tracks! not better had he slipped off a few of the black rings of his brush, and left them there in his wake. There is no confounding the coon track with any other, for it has no parallel. His imprint has been likened to that of a baby's foot, and he classifies and announces himself a plantigrade at every step.

But enough of coons and foxes and rabbits and their wildling neigh-

bors. For the present my winter walk must end; and, after all, how little to the purpose have I conveyed in all this talk! There is a plenteous eye-harvest in these winter fields, it is true; but this is only the husk. Like the squirrel with his nut, I have let in a little light; but like him again, I have bestowed only the shell and kept the kernel.

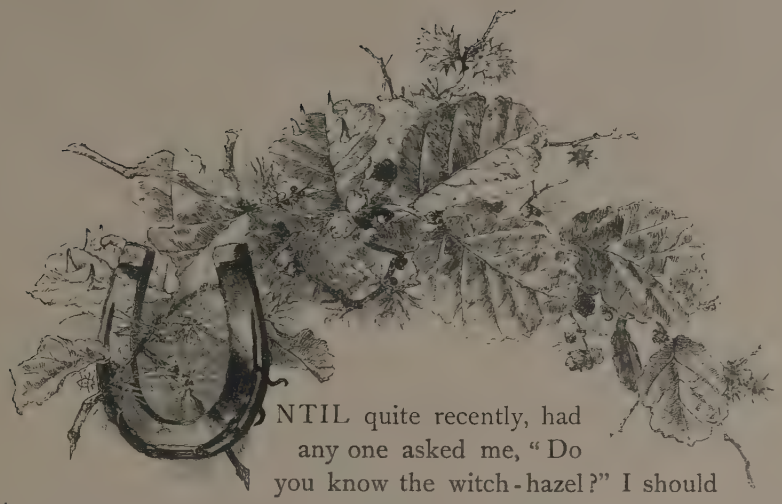
What of the light heart and lighter spirit? Who can give voice to these? They are not to be measured by the simple pageantry of the retina. It is not the fleet track of fox or hare that gives this impetus to our pace, and flings off this burden of care. There is a new heaven and a new earth in these glorious white days. One might almost seem translated, disembodied, were it not for the very physical delight of breathing. This celestial fleece seems to have insulated the material earth. Gravitation seems suspended. With a strange buoyant exaltation you seem to hover rather than walk. Your very shadow, as a tell-tale of materiality, now appears strange and unaccountable, and you look back with surprise at your own footprints in the snow. I am reminded of that memorable and glorious outburst of one who loved the winter, who saw "through and beyond" the symbols of nature and knew the harvest of her deeper joys: "Why do the vast snow-plains give us pleasure, the twilight of the bent and half-buried woods? Is not all there consonant with virtue, justice, purity, courage, magnanimity, and does not all this amount to the track of a higher life than the otter's — a life which has not gone by and left a footprint merely, but is there with its beauty, its music, its perfume, its sweetness to exhilarate and recreate us . . . a life which we seek not to destroy, but to make our own; which, when pursued, does not earth itself, does not burrow downward, but upward; takes not to the trees, but to the heavens as its home; which the hunter pursues with winged thoughts and aspirations (these the dogs that tree it), rallying his pack with the bugle-notes of undying faith. Do the Indian and the hunter only need snow-shoes, while the saint sits in-doors in embroidered slippers?"




A WITCH HAZEL COPSE



"There is a whole Fairy-land
on the hillside where it grows."



UNTIL quite recently, had any one asked me, "Do you know the witch-hazel?" I should naturally have answered, "Yes; I have known and loved it all my life. It is the *Hamamelis Virginica.* I know its strange mystic and medicinal attributes, its triple buds, its simultaneous perennial flower and fruit, its twin seeds, its leaves, its bark, its curious galls. I know its haunts of brook or upland, its arborescent spray, and I have gathered its winter blossoms — I know everything about it." But it has since then taken me to task for my rash conceit.

Recently, during one of my autumn walks, while loitering in a brook-side thicket whither I had been decoyed and archly entertained by the antics of a ground-robin, or chewink, I was suddenly surprised by a bombardment of some small missiles rattling through the neighboring twigs, and raising a clatter among the dried leaves about me, similar to that which I had often before associated with the echoes from some distant shot-gun. But this demonstration was not thus easily explained. While I was speculating as to its cause, I discovered near by a handsome specimen of a witch-hazel bush. I had seen much larger and loftier examples of its kind, many of larger girth and more graceful habit, but never anything that approached this in the density and profusion of its blossoms. It stood, or rather seemed to hover, in the gray landscape like a phosphorescent aureole, which for the time being had been arrested and entangled in the maze of twigs, and there was a subtle atmosphere of unspeakable mischief in its witching sulphurous effulgence that led me instinctively to hold it responsible for the strange commotion I had no-

ticed. "How is this? what are you up to now?" I half queried as I drew close among the plumy branches. The answer soon came in truly characteristic fashion. I stood among the boughs, like the traditional mediæval saint, completely enveloped in a luminous halo. Almost every twig was hidden in plumy inflorescence, and everywhere among the petals there peeped forth in various grotesque grimaces the greenish nuts, ripened as always from the flowers of the previous year, and now in their full fruition. Many of these were as yet uncommunicative, others could contain themselves no longer, and wore a smile across their faces, but in by far the larger number this preliminary grin had broken into an open side-splitting laugh, displaying like two white teeth in an elfish mouth the bright-tipped seeds within. The witch-hazel bush at this epoch of its career embodies to the full the significance of its well-merited title; for whether in amused contemplation at this universal hilarity at his expense, or perhaps in playful fancy conceiving himself the cynosure of ten thousand pairs of saucy eyes, it would hardly seem that the beholder could escape the impress of its witchery.

We will pluck this comical gaping specimen, if you choose, considering it for the time being a mere botanical pod. The fissure is here seen to be widely extended, the two shining black seeds half protruding from their cells. But beware! for it knows a trick or two. Even as you look upon it, perchance within the compass of a wink, these two white-eyed seeds mysteriously disappear. There is a simultaneous sharp click! a sudden spasmodic motion of the open pod, and it lies empty in your hand. Its bright eyes are gone, and in its blind vacancy it plainly seems to question, "Whither are my children?" You may tell her then that one is, beyond all doubt, in yonder brook, and the other has taken quarters over the fence in the neighboring cornfield.

I had scarcely enjoyed a moment of amused curiosity in the midst of this gaping assemblage when I was hailed by a chorus of sharp detonations. There was a simultaneous stinging sensation on my cheek, while a perfect fusillade swept through the branches and rattled the dried leaves. This seemed to be the signal for a universal bombardment, and an intermittent fire was kept up steadily. Now, as it were, an isolated sharpshooter, singling out his man, and again a veritable volley, which made the branches quiver, followed now and then by a shower of the fringe-like yellow petals dislodged in the general commotion.

Here, then, came the first tidings of the true significance of those

queer witch-hazel nuts which I assumed to have known for twenty-five years, and whose seeds I had eaten with the dormice and the squirrels. They now proved to be genuine catapults, and their hard and polished stones were the missiles which now smote me on the cheek, in censure for that questionable affection of the past which had brought my teeth to bear on them instead of my heart and inward eye.

The power exerted by this shell is quite surprising, and its curious expellent mechanism is easily understood upon careful inspection, revealing an evident design in its impetuous proclivities. We find the pod to consist of two distinct textures, an external epidermis of a spongy, felt-like nature, surrounding a very hard, contractile shell, so constructed within as to form two distinct oval cavities closely enveloping the twin seeds. Thus it appears in a dissection of the unripe pod. On the approach of maturity both these textures become highly hygrometric, until on an auspicious day, usually in early October, but commonly not until the denuded branches of the shrub have permitted the full influx of the sun to hasten the ripening process, they yield up their moisture. The very heart of the fruit feels the quickening, until at length, with a sharp detonation, the crest of the capsule splits apart. A fine fissure is all that first appears, but this gradually extends downward on both sides of the pod, which by degrees opens, as already described. As this process advances, the horny interior walls of the cells containing the seeds also split correspondingly with the outer coat, and their smooth, hard, outward edges turn inward and forcibly compress the resisting seed, which is very hard and polished, and oval in shape. It will readily be seen, therefore, that so long as this pressure is brought to bear upon the upper conical slope of the seed, the force becomes *retentive*, while, on the other hand, when the gradual progress of the fissure has carried it below the middle, and against the receding base of the seed, the force becomes expulsive, and at the given time, presumably when the best opportunity of a target comes along, the projectile is released with almost incredible force.

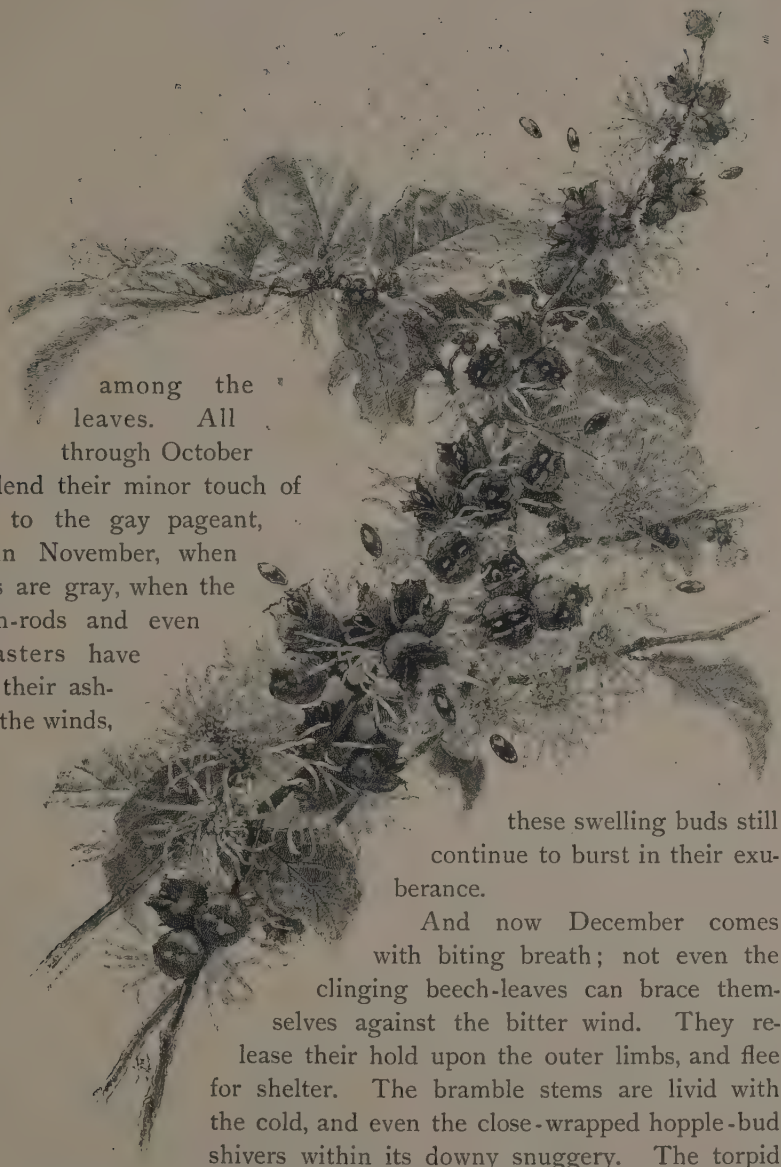
Being desirous of putting this force to some practical test, to ascertain the distance covered by the flight of the seeds, I brought home several of the branches, as well as a pocketful of the nuts. My experiments with the latter upon a long piazza and elsewhere proved to a demonstration that the momentum of the seed would commonly carry it to a distance of twenty feet, often over thirty feet, and in one or two instances

the diminutive double-barrelled howitzers succeeded in propelling their missiles to the distance of forty-five feet by actual measurement. I placed the bough well laden with the nuts over a picture in my room and retired, but I might as well have sought sleep in Pandemonium. The incessant clatter upon ceiling, wall, and furniture forced me at length to drop the offending branch out of the window. A large pasteboard box containing a pint or so of the loose pods kept up such a continual spiteful tattoo that these also had to follow their fellows, and several of my friends to whom I had presented sprigs of the festive shrub, told me on the following morning that they had been obliged to give them separate apartments.

Since the above test I have experimented with many more of the capsules in various localities, and find a marked variance in their propellent power, depending somewhat, no doubt, on the natural vigor of the various specimens, but especially upon the hygrometric conditions of the atmosphere. In wet weather the spongy covering of the capsule absorbs moisture to such a degree that even the empty distended pod often closes entirely. Thus I have found that in very dry weather the capsules open more quickly, the elasticity in the textures is augmented, and the propulsive force is much greater than in an atmosphere slightly humid, albeit not sufficient to check the distention of the pod. In such cases the effort of expulsion is very feeble, and the seed falls often within the shadow of the shrub. It is safe to say, however, that under favorable conditions an average capsule of the witch-hazel could make a good record on a target twenty feet distant without half trying. The test is easily made with the gathered nuts. The slightest pressure of the fingers on the lobes of a fully open capsule will cause the expulsion of the polished seed, this expulsion always following on the *release* of the pressure, as the description of the mechanism of the pod would indicate.

The individual flower of the witch-hazel, with its four slender petals, is rather inconspicuous than otherwise, but these flowers are always disposed in clusters of three, and these are again often densely crowded along the branches in the axil of every leaf. The result is an airy pale yellow fringe, possessing a singular luminous quality, which lights up the faded autumn thickets, and lingers in the distant copse like a diffused will-o'-the-wisp.

As early as September these delicate ribbons begin to unfurl, having reposed in delicate coils within the buds. But these are concealed



among the leaves. All through October they lend their minor touch of color to the gay pageant, and in November, when woods are gray, when the golden-rods and even the asters have sown their ashes on the winds, these swelling buds still continue to burst in their exuberance.

And now December comes with biting breath; not even the clinging beech-leaves can brace themselves against the bitter wind. They release their hold upon the outer limbs, and flee for shelter. The bramble stems are livid with the cold, and even the close-wrapped hopple-bud shivers within its downy snuggery. The torpid roots, and all manner of life beneath the ground, are locked in an icy prison. The earth's cold face

SALUTING THE EARLY SNOW.

is furrowed, and frowns with hard, relentless wrinkles. The pulses of the woods have ceased to beat, and Nature, dormant and quiescent, has retired within her burrow. Now shall you see the fulfilment of the mission of our fair witch-hazel. Look! The underwoods are dressed as for a holiday. The sombre landscape is illumined. It is the hour of jubilee among the wild witch-hazels, and the air is pungent with their grateful incense. What, then, is the deeper correspondence of this mystic flower, if not a pæan "syllabled to shape and hue," the visible symbol of Nature's welcome to the season of her repose? Yonder, like a floating phantom in the heavens, descends the gentle spirit of her slumber; it broods and lulls the landscape like a pure celestial dream — the peaceful benediction of the snow. Now hovers the soft-winged herald of the white advancing legions, and now, whirling in a mazy dance and tinkling in joyous rhythm, they invade the distance in their gentle conquest.

How this soft touch takes the temper from the edge of the cutting winds! The face of Nature is subdued, and the hard wrinkles are smoothed, and melt away from her countenance. We have heard the hazel's cannonade saluting the frost-king's coming. See now the beckoning pennants unfurled from every twig in welcome to the friendly hosts, as the fervent meteor, like a downy coverlet, enwraps the landscape in its fleecy folds. "He giveth snow like wool," says the Psalmist, and I always fancy a corresponding sympathy beneath the sod at the welcome of the first warm snow — of pallid bulbs and aching roots in warm congratulation, and all the tribe of furry folk turning in its burrow to toast its benumbed paws at the grateful glow.

If you could see the witch-hazel but once in a lifetime await the snowy season. Exquisite in flower at any time, it now appears almost supernal in its mystic beauty. Against the background of the snow these delicate petals give no token of their materiality. The individual forms are lost in a spectral glimmer, which envelops the gray twiggage in a fantastic floating aureole.

Well may our beautiful hamamelis now claim the first place among the sylvan company of our woods, as bequeathing the rarest and most bewitching spectacle within all Nature's calendar. Well may it glory in its bright heritage, for who, indeed, shall dare affirm that this glowing radiance is lost to those myriads of shining eyes, and who shall deny that there comes with this beautiful vision an ecstatic consciousness, or that this resounding note of the exuberant pod is but the lifting of an exult-

ant voice too fine for outward ear: "Go forth, my precious nurslings, and good speed! Nestle in the lap of Mother Earth. Live and perpetuate thy kind, that all the woods may know thee, and be filled with the light of thy countenance!"

All Nature loves the brooding snow, and it has been the rare prerogative of our witch-hazel flower to have become the visible symbol of that love; else why these outstretched petals catching the falling flakes? why this sensitive coiling clasp which draws the precious burden close in its soft embrace? A pretty exhibition which any one may witness during an early snow-fall in the woods.

It was one of the well-known idiosyncrasies of Thoreau to boast of the inexhaustible resources of his beloved meridian of Concord. It was his "Tropics and his Italy," confessedly his "Hudson's Bay" and his "Kingdom of Dahomey," in short, it was the vortex of the material, historical, poetical, and intellectual universe into which everything of any worth must sooner or later concentrate. The sight of a marsh-hawk in Concord meadows, he averred, was worth more to him than the "entry of the allies into Paris." "You may go round the world by the old Marlboro' road," he writes, and in one of his ecstatic moods he informed Emerson that Concord had furnished him with a specimen of red snow, and that he expected to discover the *Victoria Regia* there some day; and yet with all this alleged unfailing redundancy of his native soil, together with his ever truly remarkable visual powers, Concord failed to afford him a glimpse of this winter aureola of the witch-hazel. In fact, this shrub seems to have made comparatively little impression on him, considering the generosity with which he treated most of its more insignificant companions. Even among those pages, where one would almost of necessity expect to encounter the witch-hazel, it is conspicuous by its absence. Among his "autumnal tints," with which he paints whole pages in exquisite poetic imagery, the picture is lacking in this one important element of truth. He notes the changing colors even of many of our somewhat insignificant shrubs, touches upon the late flowers, and dwells devotedly upon his favorite "Scarlet Oaks," studies the tree in all its changes, from its green maturity to the falling leaf, and alludes to its abiding brilliancy in the fading landscape as "our chief November flower." But the *true* November flower *par excellence*, the hamamelis, unaccountably escaped him. His Maine woods, if I mistake not, were devoid of the witch-hazel; not only is there no casual mention among

his pages proper, but in a specific list of the vegetation of the country given in an appendix it is singularly omitted. He pressed through no thicket of witch-hazel on his "Excursions," and failed to notice its graceful luminous canopy of foliage, beneath which he must often have loitered in his musing walk to Wachusett. The solitudes of Walden were apparently unenlivened by any glimpse of its gay blossoms, nor were the evening mists which often enveloped his hermitage ever redolent with this unique perfume. Among all his pages, as their delightful spirit pervades my memory, I can recall but one reference to this beautiful shrub, and I remember the sense of gratification at the discovery as I settled myself comfortably in my chair in pleasant anticipation of a full and worthy tribute to my favorite of the underwoods. But I was greatly disappointed. The allusion seemed wholly inadequate. He crowded all he had to say in one brief paragraph, and this was cut off at the end as abruptly as with a brush-hook. I remembered his admiration for the poke-weed and the purple grasses. He devoted three pages of text to a beautiful monologue simply on the *leaf* of the scarlet oak. How, then, should I have looked for anything less than a volume or at least a chapter on the witch-hazel. I shall still hopefully await the future for this tribute. It must certainly be lurking somewhere among the yet unpublished manuscripts now in the possession of Mr. Blake, the fortunate and enviable heir of Thoreau's literary relics.

"There is something witch-like in the appearance of the witch-hazel," he says, "which blossoms late in October and in November, with its irregular angular spray, and petals like furies' hair or small ribbon streamers. Its blossoming, too, at this irregular period, when other shrubs have lost their leaves as well as blossoms, looks like witches' craft. Certainly it blooms in no garden of man's."

There is, indeed, much else that might be told which "looks like witches' craft" in the wild witch-hazel. Botanical writers, so far as I remember, have never fully traced the origin of its well-merited name. But it is safe to assume that the presiding spirits among the crafty, disreputable, petticoated guild of traditional notoriety suggested by its name were quick to recognize its apt affinity, and claim it as their own, and thus had a hand in the christening. Who knows but these gaping nuts have often fallen from uncanny fingers to the tune of weird incantations, to mingle their essence in "the seething caldron" with "eye of newt and toe of frog."

I doubt not that many a poor decrepit dame has hobbled to the gal-

lows sustained alone by her witch-hazel staff, and that the handle of the veritable broom which "brushed the cobwebs from the sky," and bore aloft athwart the moon that screeching, wild-eyed, flapping crone which figured in the credulous page of childhood, was aught else than a well-meaning, though scandalously bedeviled member of the mystic hamamelis.

But to return from our sky-scraping flights to the more substantial realm of fact. History has also accused our witch-hazel of complicity



A HAUNT OF THE WITCH-HAZEL.

with the ancient and abominable deeds of superstition and witchcraft. Its use as a divining-rod is proverbial, and dates back to the earliest colonial days, and in spite of the modifying influence of a more wide-spread intelligence, a belief in its peculiar efficacy has by no means ceased even at the present time. The forked witch-hazel twig is still an important factor in the detection and location of hidden springs and veins of precious ore, not a few of the well-known subterranean bonanzas having

owed their discovery to its alleged manifestations. The Central Pacific Railroad Company is said to have located a number of Artesian wells by its aid. The significantly named "Witch-hazel" coal-mine, I am told, was led to divulge its whereabouts through some mysterious tugging and twisting of a witch-hazel sprig in the hands of a scholarly adept who was versed, as it were, in this vigorous Palæozoic dead language, and by whose testimony he was advised not only as to the depth of earth between him and his antediluvian informant, but even the length and breadth and thickness of the same as he lay in his subterranean bed. Subsequent results showed that the old relic of darkness had told the truth, and they have been taking him out of his huge mausoleum by piecemeal ever since, to enjoy a new lease of life, as it were. Doubtless some of us have seen his countenance in many a live coal on our hearth-stone.

Instances might be multiplied to show the still prevailing belief in the efficacy of the witch-hazel twig as a means of discovery of all manner of subterranean treasure, and cases are by no means isolated in which its indications would seem to have been proven to a demonstration.

The twigs of various other shrubs have also served in the magic art of divination, the ash and pitch-pine being among those favored by the ancients, and in some sections of our own country those of the drupaceous trees, such as the peach, the plum, and cherry are considered especially desirable. The hamamelis, however, still holds its own, and is perhaps the most extensively prized. The history of the divining-rod furnishes a number of the most astounding and inexplicable instances of the marvellous to be found in literature; and however much the sceptic may shrug his shoulders at the wondrous and authentic instances of its powers, the subject is not thus easily to be dismissed. The old belief in an efficient consciousness lurking in the rod itself is of course dispelled; no thinking man will entertain such for a moment. But that there may exist a certain nameless sympathy exerted through the hand that holds the rod — an instinct, an occult sense, or what you will — is another aspect of the phenomenon which is deserving at least of our respect, and would certainly seem to afford the only reasonable explanation of many of the well-authenticated instances of divination.

It is not necessary to revert to the strange deeds of Jacques Aymar and Bléton, the famous diviners of history. We find many almost equal-

ly inexplicable phenomena, though happily of a less horrifying nature, at the present day. Almost every State, and indeed I might venture to say every county in every State of the Union, has its professional adept at divination, at least so far as the discovery of hidden well-springs is concerned, and our mining districts of the West are prolific in these modern soothsayers, who claim to be in familiar communication with subterranean stores of wealth, whether in the form of silver, gold, petroleum, or coal, and stand ready to betray the confidence for a consideration.

The following utterance of a well-known brother of the craft now living, and who has distinguished himself by his prophecies, based on the testimony of the witch-hazel twig, may be of interest, not only as affording an instance of the characteristic force of conviction with which these mettlesome "dowsers" are wont to defend their faith, but also as presenting an exposition of a much more reasonable theory of explanation than most of them usually entertain.

"The time is coming when scientific gentlemen and others will be compelled to recognize the sixth sense. The divining-rod is only another exemplification of the existence of a power not yet recognized; it demonstrates the superiority of mind over matter. I stand over a vein of iron ore, and the witch-hazel branch turns. My sixth sense realizes the presence of a mineral, and the realization moves the switch. Here is a feeling that must sooner or later be recognized. Men cry fraud and superstition, but I know what I know. I know that the switch turns when I walk above a metal; that is indisputable, and to me satisfactory. The same sense comes into play when people dream of certain things which are happening to friends, or are about to. I prove the correctness of my theories to men. They say yes, and look mystified. If I catch them in public they throw their heads back and decline to believe, simply because they are fearful of their friends' ridicule. But the time is coming when all must believe."

The indulgent reader will pardon me if I recur once more to a figure perhaps already sufficiently familiar; but the picture of my witch-hazel copse would be incomplete without the complement of a certain scarlet hood and cape which I so well remember. Moreover, a brief word touching upon the significance of this presence among the hazels may serve to throw a little light or afford a hint towards a possible theory of the art of divination by the forked twig, a theory which is now making many converts, and which to the writer is the only one which would seem consistent with reason and educated common-sense.

To the country-folk for miles around Aunt Huldy was an awe-in-



FINDING THE SPRING.

spiring mystery. The village children shunned her. Belated travellers encountered her in the dead of night far up among the wildest crags of the old mountain turnpike. A goodly neighbor a mile away avers that often on a rainy day, when naught but ducks and muskrats were abroad, he had leaned from the jutting window of his old saw-mill and

watched this mumbling figure poking around among the tangled thicket in the deep ravine. And now as I recall this same uncanny, familiar form seated on the rock beneath the canopy of witch-hazel, or peeping and prying among their branches, I am prone to remember in humility how many a poor martyred wretch of Cotton Mather's time, and by his pious counsel, expiated a life of all conceivable preposterous crimes on Gallows hill — yes, even for a less actual offence than hers. Verily the fates dealt kindly with thee, old dame, in having called those godly fathers before thy day. A single glance from those searching gray eyes beneath that hood and it had indeed gone hard with thee. Or had the story of this mumbling monotone fallen upon those consecrated ears of old, how easily could I predict thy fate! how grim its contrast to that quiet fireside slumber from which, happily for thee, old friend, there has been no earthly awakening!

The witch-hazel thicket was a frequent haunt of old Aunt Huldy. What, then, was her mission, for neither the mountain wilds nor blossoming meadows ever knew her idle footstep? To be sure, the hamamelis bark is one of her annual crops, for on occasion she will disclose to you, stowed away in some corner of her dress, a small crumpled paper, the tattered gift of an old sachem of the Shepaug Indians. She will have you believe that these strange hieroglyphs represent a priceless recipe for a magic potion which is a balm for all human ills — doubtless the same precious boon which has since been spread abroad for the general benefit of the race, duly advertised and labelled.

But her present errand is evidently of a different nature as she pulls and pries among the drooping branch-tips. Presently she emerges, holding in her hands a single forked branch, with which she continues her way along the path, stripping the leaves with evident care as she progresses. If you were to follow her hobbling gait through yonder wood and out upon the stumpy pasture, you might discover the little gray slant-roofed house beyond the bridge whither she is bound; and if by-and-by you were to draw still closer, and peep in at the window after the door has closed behind her, you might obtain a glimpse of as quaint a curiosity shop as it will ever be your fortune to discover. But the first thing, perhaps, to arrest the eye, because nearest the window and full in its light, is a large horseshoe hung by its ends to the side of the jutting chimney-corner, and holding between its arms a number of branching twigs. If you knew that horseshoe as well as

I, you would have discovered that it is well worn, and hangs from the nail by a single horse-hair, and that the enclosed twigs are slender branches from the witch-hazel, among which this recent cutting has doubtless just now found its place. Each one of these twigs, be it observed, is forked near the centre, and, what is still more peculiar—could you but see more clearly through these wriggly panes—each bears a rough knobby growth or cluster of the same somewhere attached. This is not the natural nut of the witch-hazel, but a roundish prickly bur, a sort of supplementary fruit of this mysterious shrub, of which there is also another of a similar nature often to be seen upon the leaves. It matters not that the superficial scientific eye detects a mere excrescence—the fantastic cell of a certain gall-making aphis. To Aunt Huldy it would seem to have been sent to this shrub as the magician's own spell, the one all-potent divining charm of the witch-hazel. If the secret were told, however, I fancy a cunning scheme beneath this shrewd assumption, and that with this charm alone many of those wonderful prophecies of hidden springs with which her art had always been associated, the perennial wells which bore her name even in many a distant township, had never seen the light.

There was one other talisman, certainly, which does not appear among the household relics, nor indeed could the sharpest eye discover it in any visible corner of her quaint interior. There were many traditions of a certain horse-chestnut necklace which she was said to wear; and one old farmer—Mr. Zenas Knapp, from a neighboring town—who on a certain occasion had sought the services of the artful dame for the location of a well upon his premises, stoutly avers that as he awaited her in his wagon at her gate, and chanced to look in at her windows, he distinctly saw her put the necklace around her neck and conceal it beneath her dress.

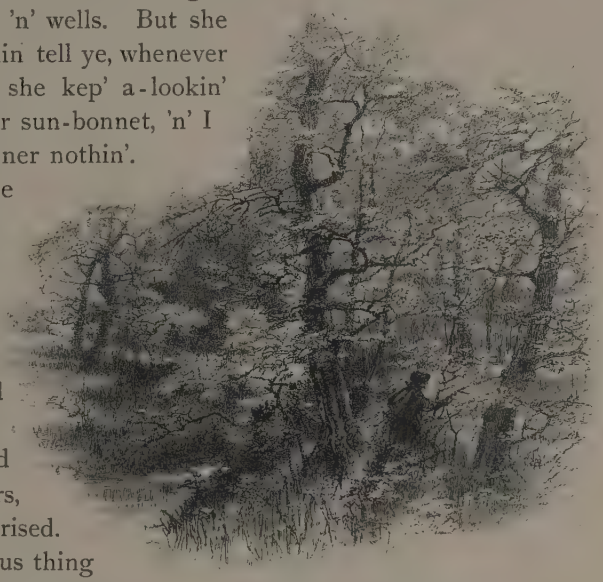
Aunt Huldy is a favorite theme with old Farmer Knapp, or "Purp" as he is familiarly called, and the story of this ride to Zoar with the shrewd old dame is known by heart to every common frequenter of the village store, and an idea of which is best conveyed in his own words as nearly as they can be recalled.

"Wall, we rode along fer quite a spell, she a settin' on one side, 'n' my young un on t'other, 'n' she sot thar jest ez still ez a scarcrow, 'n' never opened her hed ner nothin'. Pooty soon we cum to Squire Nathan's haouse yender, 'n' w'en we wuz right under his big maple-tree,

she said, a kinder standin' up 'n' starin'-like, 'n' pointin' up in the branches,

"'By-and-by — by-and-by,
Squire Nathan's tree is doomed to die,'

sez she; 'n' every one on ye knows thet the tree *did* die thet next winter, 'n' they wa'n't a sightlier tree around than thet wuz w'en she wuz thar thet day. Naow haow did she knaow *thet?* Wall, arter thet I tried teu git suthin aout of her, 'n' I 'kep' a talkin' 'n' kinder hintin' 'n' tryin' to find aout suthin abaout haow she gut wind o' them springs 'n' wells. But she wuz mighty mum, I kin tell ye, whenever I gut onto *thet;* 'n' she kep' a-lookin' right ahead, under her sun-bonnet, 'n' I cuddent see her face ner nothin'.



SEEKING THE "WITCH-BUR."

"Pooty soon the waggin joggled over some stuns, 'n' she was pooty considable shook up, 'n' then I gut a site uv a switch wut she hed in her hand under her cape. I knowed she hed it somewhars, 'n' wa'n't much s'prised. But they wuz *one* curus thing thar thet I cuddent help a seein' 'n' a wonderin' abaout. Ye see it wuz a forked stick, 'n' w'en I ast her she said it wuz witch-hazel; but jest abaout the middle on't they wuz a piece of black cloth tied around ez ef they wuz suthin kinder lumpish under it, 'n' once I reely thort I seen it wriggle. Naow she sot gret store by this ere thing she kivered up so cluss, 'n' the treuth on't is I gut paowerfle curus abaout wut wuz under thar, 'n' arter a spell I thort I'd make no bones on't, but jest cum right aout 'n' ask her. Of course I knowed she wuz alfired cute 'n' knowin', 'n' all sech, 'n' wa'n't a-goin' to give nothin' away, ye knaow, but I thort I'd ask her jest fer curosity. So sez I, kinder clever 'n' affable like, sez I, 'Aunt Huldy, wut is't ye got thar tied up so mity fine?'

"'Suthin ez 'pears teu make fokes pesky curus,' sez she, a kinder mumblin' like. But I wa'n't a-goin' to be ketched like *thet*, so I ast her agin. 'Cum, naow, Aunt Huldy,' sez I, 'wut is't ye—'

"'Sh!!!' sez she, a jumpin' 'n' a quiverin' all over. 'N' then she waited a minute, 'n' pooty soon said kinder low 'n' squeaky, a-bendin' over to'rd me, '*Look eeah*, do yeu want I shud find your well er *don't* ye?'

"'Yes, of course I do, Aunt Huldy,' sez I.

"'Well, then, *jest shet up*,' says she, a kinder hissin'. 'Ef I'd a wanted yeu to *seen* wut they iz thar, 'tain't likely I shud 'a' kivered it up. *The less yeu knaow on't the better are ye off*.'"

"'N' w'en she said this, Lor' she turned and gi' me sech a look aout o' them piercin' green eyes uv hern thet I vaow I was reely scairt, 'n' my young un cum pleggy near a tumblin' aout the waggin, 'n' he begin a tremblin', 'n' took on so thet I had to let him git aout and foot it. Wall, I jest kep' my *maouth shet* arter thet, 'n' put old Jerry to his best licks fer hum. W'en we gut thar, arter she hed gut aout the waggin 'n' fixed her clo'es, the fust thing wut she done—kinder spitefle-like—she turned 'n' ast me who wuz livin' with me naow, 'n' haow wuz my woman's rheumatiz, 'n' w'ether I wuz ez carfle uv my calves ez I used teu wuz. 'N' then she sot aout to laugh like she wuz all possessed. Naow wut did she mean by *thet*, eh? She know'd mity well ez haow Phoeby hed bin on her back fer tew years with a bad spine, 'n' I hain't never abused no calf ez I knows on, ner any other dumb critter."

At this point of the narrative there is usually a significant and contagious smile distributed around pretty generally among the farmer's listeners, a possible explanation of which may be found in a consideration of his popular patronymic of "Purp," a kindly abbreviature of "Perpetual Motion," the true significance of which title, I fear, has never dawned upon Zenas, for, unless my memory deceives me, they dubbed him "Perpetual Motion," solely because *he wouldn't work*. But to resume our story—

"And then she sot abaout to bizniss. She held the forked branch so fashion, with the end a' standin' out in front. She started full tilt frum the turnstile and went aout to'rd the corn-crib. Then she turned to the left, and went into the orchard, 'n' we all follied her around fer consid able of a spell. She wuz paowerfle fidgety, 'n' kep' a mumblin' 'n' glarin' araoun' like she wuz crazy. But pooty soon w'en she gut daown teu the lower edge of the orchard, she gut goin' kinder slow 'n' carfle,

'n' pooty soon she stood stock-still, 'n' I seen the rod dip cl'ar daown to the graoun', 'n' then I seen her shake all over,' n' heern her say some potry er suthin with rhymes into it wut I cuddent ketch. 'N' then, all on a sudden, she got daown on all fours, 'n' picked up suthin 'n' put it in her pocket. My young un said it was a toad, fer he seen it jump aout the cloth 'n' run along the twig 'n' then jump off, but I didn't see nothin'. She showed me whar to dig, 'n' I stuck in a stake.

"Wall, I struck water thar in less 'n six feet, 'n' even ef 'tain't the softest kind uv water, it's the coldest well in taown. But I vaow it's a *'tarnal chore* to fetch it, 'n' I wish she'd a struck it some'rs nearer the haouse. I tole her so et the time, but she sed thet it wud cost a fortoon to dig a well anywerz on t'other side the orchard, 'n' thet the water thar wa'n't nigh so inwigoratin' nuther; 'n' she said another curus thing jest ez she went into her gate, w'en I tuk her hum, kinder jinglin' it in rhymes, suthin like this. 'Yes,' says she,

"'They's sum ez likes a handy well
With water soft ez dew:
Hard water kills the wimmin folk,
But it's the best fer *yeu*.'

'N' then she gi' me the durndest wink ye ever see, 'n' shet the door. Naow, wut wuz she a gittin' off then?"

"Look *ee*ah, Zenas," exclaims a voice from a corner over beyond the barricade of flour-barrels, as the genial white-fringed face of old Postmaster Patch peers out at his little window among the musty letter-boxes, "Aunt Huldy wuz *in* here yist'dy t' leave a mess uv snakeroot fer the doctor, 'n' we wuz talkin' abaout your spring over thar, 'n' she sed a thing er tew abaout ye. She sed yeu wuz a thankless critter, wut didn't know w'en yeu wuz well off, 'n' thet yeu wuddent be reely fixed teu *suit* ye 'ntil yeu hed a cold runnin' eaves-pipe right et yer maouth. 'N' jest ez she wuz goin' aout the door, she sed thet yeu wuz a *curus* case, 'n' hed a *pecul'ar spleen*, 'n' thet she thort ez haow thet water in your well, *in the long run*, wuz a gret site hullsomer fer ye then *pipe-water*. 'N' she tole me t' tell ye thet w'en—"

But the presumably precious message was lost in the increasing hilarious din, in which old Zenas himself now irresistibly, though reluctantly joined.

Farmer Knapp's well was but one of many in the neighborhood

which Aunt Huldy had similarly located, some of them twenty years previous, and there was one feature in her manœuvres which seems commonly to have been observed and commented upon with much mystery by the credulous country-folk, namely, the act of picking up something from the ground near the spot where the rod had turned. Some said it was a toad, others a snake or worm, but no one during her life ever succeeded in finding out her secret.

After Aunt Huldy's death, however, her nearest of kin, in searching among the strange inheritance, discovered in a secreted corner a curious relic in the shape of a chain of odd, bead-like objects strung upon a few horse-hairs. The ends were furnished with a loop and hook, and it had evidently been used as a necklace. As to the character of these objects no one could give the slightest clew. They were about the size of a horse-chestnut, hard, wrinkled, and very tough. Their general aspect led to the belief that they were a fruit or vegetable growth of some kind, but no one had ever seen them before. They were looked upon with awe, and handled very gingerly, and finally thrown in the fire as excellent things to be gotten rid of. Later, as the search was continued, presumably for treasure somewhere concealed — for it was commonly whispered that Aunt Huldy was "well seized" of a considerable competence in good American money — there came to light, I am told, in one of her pockets, a round object covered with dirt. It was about the size of a horse-chestnut. Perhaps to the eager eye of this "next of kin" it bore some general resemblance to a nugget — who knows? At all events, it was put in water and washed, so they say, when lo! it opened and spread out like a star. Its identity with the strange objects which had composed the mystic necklace was obvious, particularly as, on drying, the leathery points closed inward, and the whole resolved itself into a compact ball. It was kept as a great curiosity, and shown to hundreds of eager towns-people, who need have looked no farther than their own door-yard, perhaps, to have seen its exact counterpart opening in the dewy morning, closing at noon, and again at night simulating the stars which looked down upon them.

This object will be recognized by many of my readers as the well-known fungus called the earth-star, *Geaster hygrometricus*, a plant of the puff-ball tribe, the puff case here being in the centre, and the pointed arms of an outer envelope opening or closing according to the varying conditions of the atmosphere.

Herein doubtless lay the revelation of Aunt Huldy's remarkable secret. It was well known that she preferred to make her exploits at the hour of noon, and generally on a sunny day. Under such circumstances the earth-star would generally be found to be tightly closed; when under the same general conditions, therefore, a single open star was discerned, the natural presumption, of course, would be the existence of an increased amount of moisture either in the adjacent air or in the earth at its root. There were many other similar natural relics among



DIVINING FOR METALS.

From Agricola's *De Re Metallica.*

this aged dame's worldly effects, which doubtless, could their significance be known, would furnish an equally simple solution to many of the strange deeds with which her memory is associated, and which are now shrouded in mystery: as for example, in the instance alluded to of "Squire Nathan's tree," whose doom was plainly sealed by the presence of a cluster of *Agaric* fungus at its root, though no marked token of its effects yet appeared among the branches where the wily dame was so careful to direct the gaze of her companion.

Indeed, it would seem as though we need look no further than these

and many other hints from Aunt Huldy for an adequate insight to the whole range of marvellous deeds of divination which have set the world agog for ages. A twinge of rheumatism—"when Betty's bones are on the rack"—is often a true prophet, albeit best honored abroad. "'Twill rain to-morrow; I feel it in my thumbs," I have often heard Aunt Huldy say.

Goethe, in one of his novels, describes a lady seized with a sudden chill upon a spot where subsequently the outcrop of a coal-bed is discovered. The incident is introduced without attempt at scientific explanation, and apparently to convey to the reader a vivid conception of the lady's extreme delicacy of temperament. I infer from it that such cases were known to the great philosopher, and that he believed such supersensitiveness to be in some way connected with the performances of diviners.

Instances of this nature might be multiplied, and are by no means rare in actual experience. An extreme sympathetic sensitiveness of the nervous system such as is here suggested, or an extensive and intimate knowledge of material nature through the sense of sight alone — in either or both these conditions we may find ample explanation of many strange phenomena in connection with divination. Many diviners dispense with the rod altogether, and profess to be equally successful in their discoveries, and lay great stress upon their fortunate possession of a certain mysterious "sixth sense," which, after all, is nothing more nor less than a process of unconscious mental deduction, analogous to the well-known feeling of anticipation which is common to almost every habitual saunterer and nature student, by which, through some subtle, involuntary reasoning from effect to cause, he receives a premonition of the discovery of some rare plant or bird, and shortly finds it before him. "That is a sightly place for gold-thread," says the simpler, and forthwith steps into the dark wood and uproots a basketful.

As bearing on this phase of the subject, it is interesting to note among the researches of Dr. Rossiter Raymond, in his recent comprehensive treatise on the divining-rod, the following expression from the wise Agricola of old, as showing forth a gleam of sterling commonsense amid the almost universal superstition of the Middle Ages with reference to the divining-rod:

The "curious engraving" to which he alludes I reproduce on the preceding page through the courtesy of Mr. Raymond.

"A brief, interesting, and impartial discussion of the divining-rod from the stand-point of the Middle Ages, together with a curious engraving illustrating its use, will be found in the well-known work of Agricola (*De Re Metallica*, Basle, 1546), published in the sixteenth century, both in Latin and in German, copies of which, though not very common, are still to be met with in the antiquarian book-stores of Europe. I believe the library of the School of Mines of Columbia College contains a German copy. In the preparation of this paper I have made use of the Latin edition, which is the only one in my possession. . . .

"The great Agricola, a keen observer and wise reasoner, after saying that the alleged virtues of the divining-rod are subject to much dispute, and stating both sides of the dispute with admirable clearness, demolishes in a few words the supposed analogies of magnetism and electricity, but declares that if the divining-rod derives any power from spells and incantations, that is a matter neither permissible nor agreeable for him to discuss. He proceeds, moreover, to assert as the general result of experience in his time that the professors of the divining-rod, though they sometimes succeed in discovering veins, quite as frequently fail, and have to dig like other people if they wish to find anything. Wherefore he advises the respectable and sober miner to *study the indications of nature*, and then dig at once, without further fooling. In the quaint wood-cut which accompanies this passage a miner is represented in the background as cutting his hazel twig, while another in the foreground is proceeding with it in due form for the discovery of the mine; and (whether in sarcasm or not I do not undertake to say) at the very point to which the latter is steering, two of Agricola's 'good and sober' miners have already found ore by the homely process of digging. . . .

"As a piece of sorcery, he goes on to say, the virtuous and respectable miner will avoid it; *as a piece of science, it is inferior to the study of nature, following the indications of which, the skilful and prudent miner selects a good place for exploration*, and '*ibi metallicus agit fossas*'—'there the miner digs'—to which business, rod or no rod, he is bound to come at last."

The antiquity of the divining-rod is variously estimated by historical writers. Professor Fiske has traced its origin to a wide-spread Aryan myth associated with forked lightning; but its earliest employment relating to the discovery of subterranean treasure of whatever nature is generally placed at the period of the fifteenth century, after which time it soon came into extensive use through a large portion of Europe.

The hazel alluded to by the ancients, however, is not, as commonly supposed, identical with the witch-hazel. The plant of early reference is the true hazel (*Corylus*), which yields the filberts of commerce, while the witch-hazel, or wych-hazel, belongs to a totally different order of plants (*Hamamelaceæ*), of which but two species are known, neither being a native of the continent of Europe. North America is favored with one, and Japan claims the other. The derivation of this scientific title

is somewhat obscure. It is evidently of Greek origin, but it has been a stumbling-block to botanical scholars. The witch-hazel is remarkable among our flora as producing simultaneously buds, flowers, and fruit, and many profess to detect in the scientific name the sense, "flowers together with the fruit." Another, who has a mind of his own, gets at the bottom of the matter in this fashion: "Greek, *Amamelis*, from *ama*, accompanying, and *melea*, apple-tree, applied, it is thought, because the apple in fruit accompanies this flower;" all of which is very true, and indeed would seem the most literal translation.

As to the popular title "witch-hazel," there is little doubt but that the present prefix is a corruption of the old Saxon word "wych," which signifies "drooping" (referring to the character of the spray), and also applied to other trees, notably the "wych-elm" of Europe. But the earlier word is now quite generally fallen into disuse as regards both trees.

Foreign travellers mention meeting with the witch-hazel tree in various parts of Europe, and especially in the cultivated shrubberies and gardens of England, where its pale yellow fringe may be frequently seen all through the winter; but this is no spontaneous growth. It is our own American shrub, which has been nursed and fostered in our mother country as an artificial ornament. But it has remained true to its native soil in spite of coaxing, and refuses to become naturalized. It never shows so bright a face as in its natural habitat, and will rarely perfect a seed.

But with us, from Canada to the Gulf, to the north, the south, the east, and west, it suffuses its halo in the free wild underwoods — emblem of a nobler liberty and a more exalted glory. It is America's own flower. It sends abroad its welcome when all nature else is cold and dumb. It leads the way and lights the path, and even opens up the golden opportunity of affluence and prosperity. Take all the rest, but leave to me the generous, hearty, impulsive, roguish, sympathetic, joyous, perennial witch-hazel.

"There is a whole fairy-land upon the hill-side where it grows," says Thoreau. Yes, it is indeed an ideal realm for the revels of elfindom; and while I have never yet succeeded in catching a glimpse of the revellers — they always hie away and leave only their peaked caps among the leaves when I come by — I am glad to note that another, more fortunate, once surprised them in their moonlight gambols, and has left a record of their doings, with which I am in most hearty sympathy,

and with which — why has it not sooner occurred to me? — I may fittingly close my page:

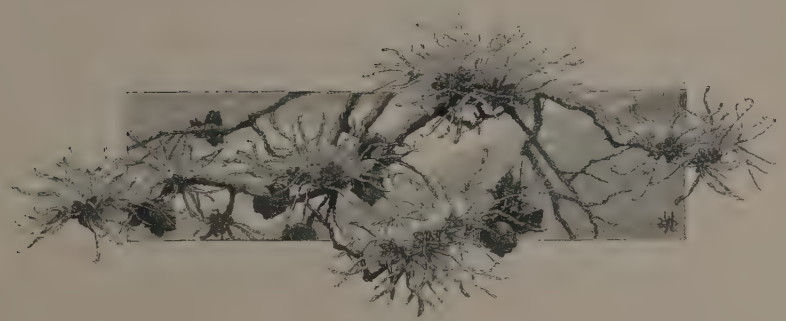
"They come from beds of lichen green;
They creep from the mullein's velvet screen;
Some on the backs of beetles fly
From the silver tops of moon-touched trees,
Where they swung in their cobweb hammocks high,
And rocked about in the evening breeze.

* * * * * *

"Ouphe and goblin! imp and sprite!
Elf of eve! and starry fay!
Ye that love the moon's soft light,
Hither, hither, wend your way.
Twine ye in a jocund ring,
Sing and trip it merrily,
Hand to hand and wing to wing,
Round the wild witch-hazel tree.

* * * * *

"The leaf-harp sounds our roundelay;
The owlets' eyes our lanterns be;
Thus we sing and dance and play
Round the wild witch-hazel tree."

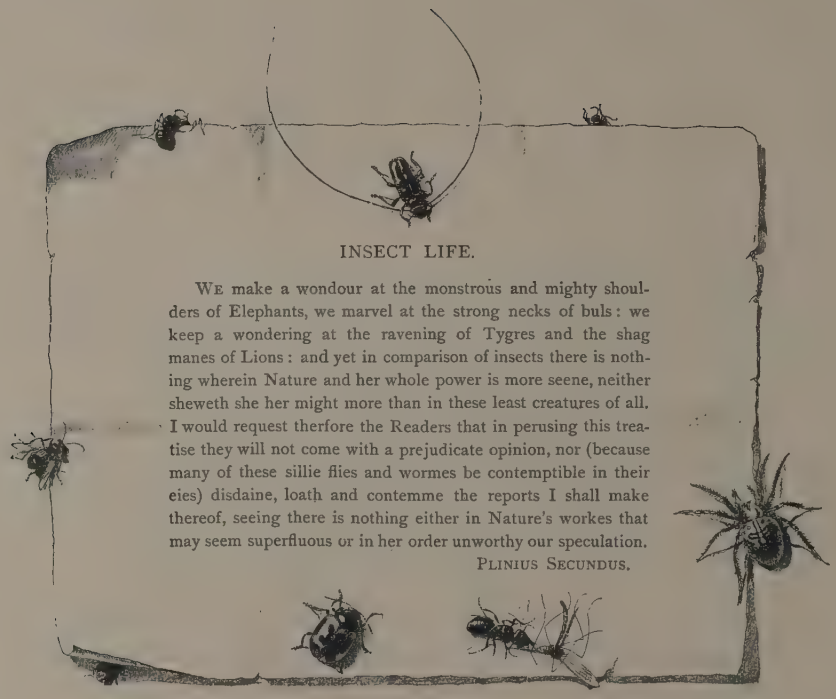


"THE HARVEST OF A QUIET EYE."



LBRAHIM [the Gentle Boy] would derive enjoyment from the most trifling events, and from every object about him: he seemed to discover rich treasures of happiness by a faculty analogous to that of the witch-hazel which points to hidden gold where all is barren to the eye. HAWTHORNE.

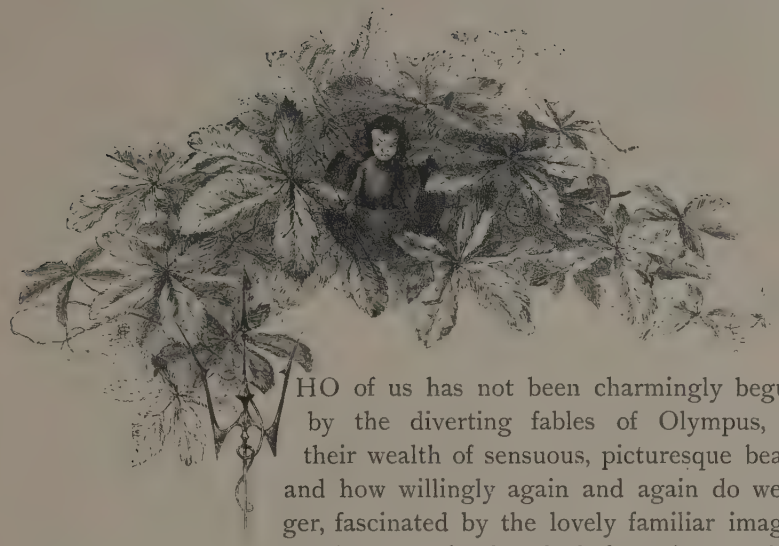

SAP
BEWITCHED



INSECT LIFE.

We make a wondour at the monstrous and mighty shoulders of Elephants, we marvel at the strong necks of buls: we keep a wondering at the ravening of Tygres and the shag manes of Lions: and yet in comparison of insects there is nothing wherein Nature and her whole power is more seene, neither sheweth she her might more than in these least creatures of all. I would request therfore the Readers that in perusing this treatise they will not come with a prejudicate opinion, nor (because many of these sillie flies and wormes be contemptible in their eies) disdaine, loath and contemme the reports I shall make thereof, seeing there is nothing either in Nature's workes that may seem superfluous or in her order unworthy our speculation.

Plinius Secundus.



WHO of us has not been charmingly beguiled by the diverting fables of Olympus, with their wealth of sensuous, picturesque beauty! and how willingly again and again do we linger, fascinated by the lovely familiar image of Pandora as she kneels before the mystic, ill-starred casket, and toys with the alluring knot! And now, as she yields to its enchantments, and at length flings back the fated lid and releases the captive legions — that traditional mischievous swarm of troubles which has since afflicted the world — how does our fancy hover with the buzzing throng!

Until that fateful hour — evermore as fittingly identified with Pandora and Epimetheus as with the garden of sacred story — Nature had only smiled, her creatures dwelling in a paradise of perennial, joyous healthfulness and youth. But now all was changed, as the myriad swarm of portentous ogres, ouphes, and goblins bedimmed the skies, darkened the earth in gloom, and filled the future with ominous foreboding. There were imps of every shape and hue, so the story runs. That many were blue, goes without the saying. The type of every human ill — moral, spiritual, as well as physical — now hovered on eager wing. Who shall affirm how many of those dread pestilential atoms, since captured in the net of modern science, and burdened evermore each with its cumbrous tag, made not their début in this primitive masquerade? — the wily bacterium in appropriate garb, and other equally hard-named potential monads of more or less differentiated molecular, zymotic, cellulose protoplasm — the azotic microbe, the insidious bioplast, the malaria, perhaps in a hundred

guises, besides an attendant elusive host, as yet in their nameless festive freedom.

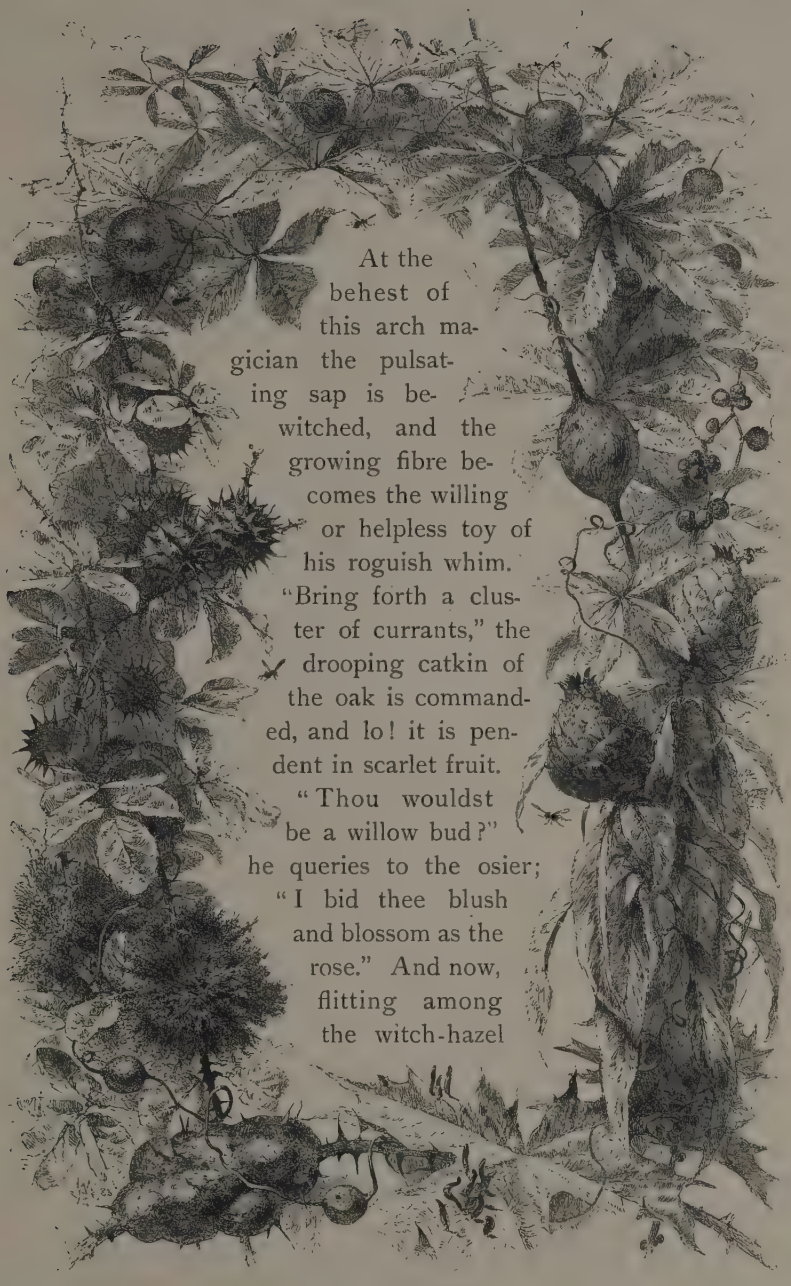
From that first outing in ancient Greece these sportive hordes have brought the whole earth within earshot of their unwelcome hum. Nor is it my purpose to further the fame of a class already too familiar as unbidden guests at every hearth. In addition to these — the cares, the sorrows, the passions, and corporeal ills which now besieged humanity — we are also told that the flowers and trees, till now in perpetual bloom, likewise began to droop and lose their leaves. "The worm i' the bud" now first befell the rose, and the blight and other maladies brought to the comeliest blossom distorting blemish or early death. Thus, on closer scrutiny, it would scarce seem a gift of favored insight to discern among the spectacle of that buzzing, impish throng a host of witching shapes whose presence here, singularly enough, has not usually been accredited, but which have yet become suggestively familiar in the modern page of science, if not of mythologic poesy.

While, then, poetic fancy has oft portrayed with pencil and pen the mischievous progeny of Pandora's box, picturing the theme in its appropriate attributes of the marvellous — with ogre face and horn, with furry ear and cloven foot, bat-like wing and dreadful tail — I am not aware that an equipment such as this which follows has ever found its way among the drollery of that hapless masque.

Four gauzy wings lit with rainbow hues; a pair of Argus eyes, each of itself a myriad mosaic of vision; a jetty armor closely plaited about a dainty waist; and a piercing poniard which is at once a menace, a mystic wand, and weapon. Such is the prosaic figure of a sprightly shape which certainly must have hummed about the ears of Pandora and Epimetheus; the one veritable and tangible counterpart of the traditional type of elfindom, a harlequin vested with magic powers of touch and spell which even Queen Mab might have coveted, or which the "merry wanderer" himself might have envied.

He it is, our insect elf, who summons at will an apple from a leaf, a cherry from the acorn's branch, a pine-cone from a willow bud, a resentful caltrop from a peaceful stem.

> "Lo! at his fairy touch at once springs forth
> A magic growth of seeming fruits and flowers
> Fair to the eye, and animate within
> By more than vegetative life."



HARLEQUIN FRUITS.

boughs, "I would have a hundred helmets for my retainers," he whispers; and forthwith its leaf is studded with the peaked caps. And thus he goes his rounds, leaving the evidences of his pranks on every hand, the embodiment of Puck himself. But the hero of our chapter is no myth. Entomological fervor has captured him; prosaic fingers have dissected his tiny anatomy, and cold science has impaled him, duly catalogued and labelled; and *Cynips* is his name — at least his family name; the less said of his further christening the better for our pages.

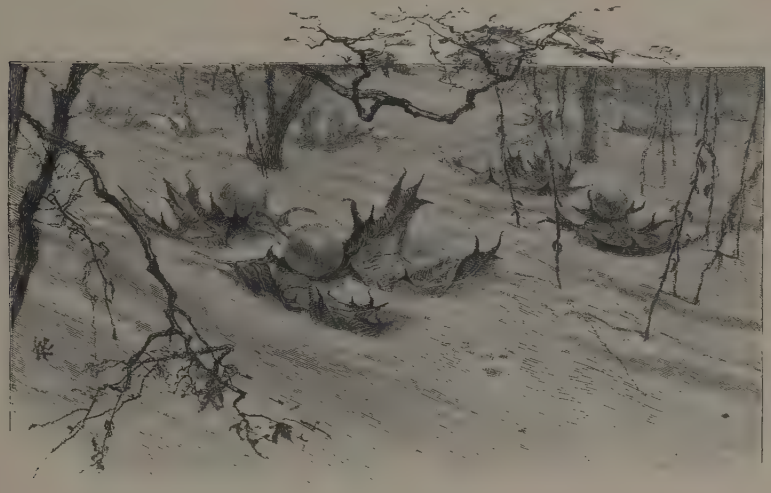
And yet how little do they know him! Even in his mummy he still mocks at wisdom and eludes investigation. The secret of his art is yet, as in the ages, involved in mystery. Who has not seen the evidences of his fantastic touch — the prickly swelling of the bramble, the rosy apple among the oak leaves, or, later, a satiny, light brown, airy ball drifting on the winter snow?

For centuries this oak-apple, or its prototype, has proven a poser — an apple of discord among the wise-heads of ancient times, and by no means, even at the present day, a bubble to be dismissed — or sentenced, I might say, with a learned nod, and with a discouraging penalty, in tedious Latin or Greek.

This supplementary predisposition of the oak towards the formation of these as well as a host of other similar excrescences was recognized among the earliest scientists. It is interesting to note among the amusing pages of Pliny, in the quaint English of his translator, in a chapter entitled "Of the gall-nuts and how many other things Maſt-trees doe beare beſides Maſt," the following observations: "What trees ſoever beare maſt carry alſo certaine nuts called galls, and lightly they are full of maſt but each other yeare. The beſt galls be thoſe of Comagena; the worſt is that of the oke called Robur, which are knowne by the holes they have that may be ſeen through.... Moreover, there grow upon the tree certaine little bals not unlike to nuts, having ſoft flox within, good to make candle-wieck or matches for lamps, for burn they wil without any oile.... It beareth alſo other little pils or bals, good for nothing, covered with haire.... On the backſide alſo of the leaf, where it is reddiſh, yee ſhal find ſticking certaine wateriſh pearls, white and tranſparent or cleare within, ſo long as they be ſoft and tender, wherein there breed little flies or gnats, howbeit in the end they ripen and wax harder in the manner of galls."

Abnormal growths answering to all of the above are to be found plen-

tifully upon the oaks of to-day. It would have seemed but a natural process of reasoning in this antique philosopher, to have taken the hint of the "little flies" in one species to have accounted for the "holes" in another; but at this early day the intervention of the conjuring Cynips was not dreamed of even by the most advanced naturalists. The gall-nut was looked upon as a legitimate product of the oak, as shown by Pliny's suggestion above of the gall and the acorn representing an alternate harvest: an observation which was but an echo of the accepted belief among the leading botanists of his day. Indeed, many were so thoroughly deceived by these mimic forms of bud, flower, and fruit, as to



UNDER THE OAK-TREE.

have classed as distinct species the plants on which they appeared. An illustration of this is shown in the instance of such a growth affecting the willow, and concerning which old John Gerarde, one of the fathers of English botany, even so late as the sixteenth century, discoursed so graciously in his "Herball," where we find the curiosity described and actually figured as the "rose-willow," noted as a distinct flowering species endowed with "blushing honours" and "making a gallant shew," also as "being set up in houses for the decking of the same," and as "yeelding a most cooling aire in the heat of summer."

Not until the time of Swammerdam, I believe, was the puzzle solved, this naturalist being the first accredited eye-witness to the magic touch of the tiny fly upon the leaf, although unhappily he was not enabled to draw from the event the ultimate visible proof which would have been so valuable to him.

The rearing of a gall on a leaf, from the direct puncture of a known species recognized in the act of depositing its egg, may have been achieved by some enterprising student, but I have not heard of it. Many naturalists have no doubt seen the gall-fly at work. The writer has been so favored on two separate occasions: once sitting in the fields among a tangle of cinque-foil vines, when he observed the episode which he has mentioned in a previous volume, no doubt ambiguously to many, alluding to the winged mignon sent to seek the creeping cinque-foil, learn the disappointment of its yellow blossom, and with magic needle thread those crimson beads upon the fruitless stems; for this, in truth, was what the elf was doing. The figure of this little winged atom had become familiar through numerous specimens which I had seen emerge from their spherical domiciles in my keeping. Its presence among its favorite vines was suggestive, flitting about from bud to bud in the early spring, intent on mischief. But even in this instance much was left for conjecture. It was on another occasion, when as a boy, lounging — though with open eyes, however — beneath an oak-tree on a favorite knoll, I was permitted to observe the act more minutely.

My fancy had been amused for some little time by the antics of a brilliant gold-eyed fly running hither and thither upon the low sapling leaves of an oak stump at my side, a post oak as I now recall, when suddenly a diminutive black insect hovered near, and lit upon the leaf, seemingly intent on driving away the original possessor. I looked with boyish interest, hopefully anticipating a battle to the death between the rival claimants; but the golden midge, perhaps seeing his adversary so well armed, took wing and abandoned the field. The new-comer was a minute creature, with a black shiny body, slender scarlet legs and antennæ, and glassy wings. The insect had evidently arrived on business, every movement instinct with purpose, and being in a receptive mood, I observed her closely. The nature of her calling had not dawned upon me, until I presently discovered, by a peculiar attitude of the insect, the presence of what appeared to be a sting protruding from the underside

of its abdomen. It now became obvious that this piercer was being thrust into the leaf by a curious wriggling motion of the body, thus suggesting that the insect was in truth a gall-fly.

The resultant fruit of this wound I did not investigate, but the probabilities could doubtless have been verified by actual fantastic proof, had the matter been followed up. I observed that the hair-like ovipositor penetrated the pulp of the leaf close to the mid-vein, presumably depositing within a tiny egg, and ejecting therewith a magic fluid, which was thenceforth to work its marvels upon the leaf, demoralizing its adjacent sap and fibre — a venom poison analogous to that of the bee, but with latent potentialities of mischief with which the bee, happily for its victims, is not possessed.

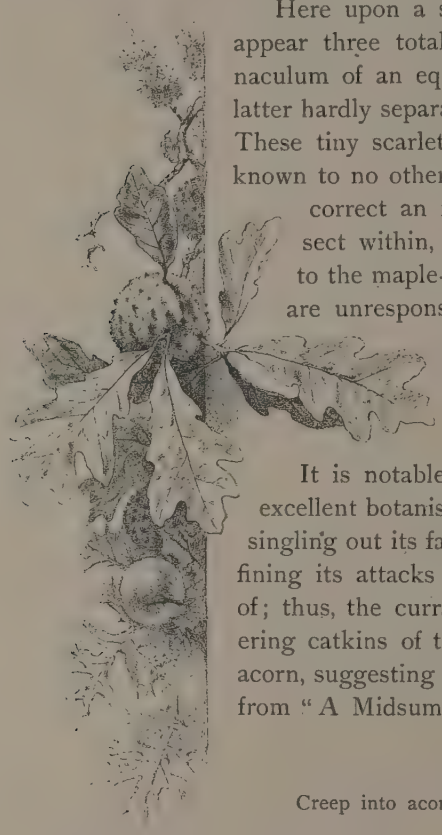
The wounded portion of the leaf now begins to swell, to change from its normal color; even its very texture undergoes a transformation, and its surface begins to bristle with spines, becomes incased with ivory, coral, or wood, or perhaps clothed with down or wool, in obedience to the pet whim of its fairy parent. The embedded egg, it has been conclusively proven, becomes encysted, and grows apace for several days, presumably by absorption of the surrounding sap, until it at length hatches into a small whitish grub.

The precise nature of this strange cellular metamorphosis is still unsolved. Many of the older authorities have held that the corroding fluid of the insect checks the flow of sap, and causes a fermentation, which burns the contiguous tissues and changes their normal color; that the sap thus turned from its proper function extravasates around the egg, and becomes solidified around the same by contact with the air. Others have attributed it to the continual irritation caused by the insect gnawing within; but this has been easily refuted by the fact that the gall is sometimes half grown even while the life within is in its egg estate.

Rennie attributed the swellings to the simple force of expansion of the sap confined to the base of the puncture, the orifice being sealed by the fly with gluten. All these suppositions have now given way to the generally accepted belief that the gall is but a natural result of chemical irritation, a vegetable excrescence analogous to an inflamed tumor in the animal body, caused by a swelling of the cellular tissue and an organic change in its character.

From a chemical point of view, the subject would seem to offer a wide field for speculation and experiment. For if, indeed, the tiny "en-

venomed point" be held alone accountable for the multitudinous freaks even upon a single tree, each individual *lusus* the product of some particular alchemy known only to its respective winged artificer, it might well be wondered whether human artifice might not introduce a chemical potion which should institute a similar wonder-working potency and produce a marvel yet unknown.



Here upon a single white-oak leaf, side by side, appear three totally distinct forms, each the hibernaculum of an equally distinct species of insect, the latter hardly separable in identity by the unaided eye. These tiny scarlet spicules upon the maple leaf are known to no other tree, and their outward form is as correct an index to science as the winged insect within, showing that its arts are confined to the maple-tree alone, or else that other leaves are unresponsive to its touch. The same form of gall inevitably follows the touch of its specific fly, each species being known at a glance from its eccentric fruit.

It is notable that these diminutive insects are excellent botanists, moreover, each fly thus not only singling out its favorite plant or tree, but always confining its attacks to the same particular part thereof; thus, the currant gall-fly always seeks the flowering catkins of the oak, while another chooses the acorn, suggesting a new meaning of the familiar line from "A Midsummer-Night's Dream,"

> "elves for fear,
> Creep into acorn cups and hide them there."

A SPONGE FOR THE SCIENTIST.

This one selects the stem of a bramble, or another the thorny rose branch. Here is a large conical growth upon the tip of a willow twig, seemingly swollen with sudden ambition to become a pine-cone, the result of an insinuated potency implanted within the heart of a minute spring leaf bud—this time by an insect of another class, a minute gnat.

Again the bud of an oak invites its charmer, and is transformed to a mimic artichoke enveloping the conjured progeny.

I had almost said that every kind of plant is possessed of its special protégé; the golden-rod, jewel-weed, gill, aster, hardhack, ginseng, readily suggest themselves, while no tree that I happen to recall is exempt. The willow has a number of such fosterlings, likewise the beech, ash, birch, linden, and elm. The hickory is in great demand, while the sturdy oak, with somewhat of poetic justice, is singled out among the forest to sustain the heaviest impost upon its vitality, no less than sixty species of gall having been described, common claimants of its bounty. Baron Osten Sacken twenty years ago had classified over forty species, and a score or more have since been added by other observers—new specimens also being continually discovered.

The white-oak maintains a gall-fly constituency of thirty or more, the red, black, and willow oaks almost an equal number. No part of the tree is exempt, for while the leaves are especially in favor, there are about fifteen varieties confined to the buds, others evolved from the twigs, the bark, and, as I have said, from the catkin and acorn, nor does even the root escape. Their variations are well worth a little study. Here in close company on the leaf of a rough oak are two individuals: one a polished yellow ball, with a translucency suggesting a grape. Its interior is a marvel, reminding one of the seed ball of a dandelion, its central animated nucleus held in its proper relation to the outer filmy shell by radiating web-like spicules. Its neighbor creeps prostrate by its side, following the course of a lateral nerve of the leaf, an undulating tufted cushion covered with the softest of pink down.

Here, glued fast upon another leaf, are veritable ox-heart cherries. Again we find a thorn, and now a mushroom, so deceptive, in truth, that it has been described as such.

Almost any white-oak will show you leaves studded with the diminutive pink-cheeked peaches of *Cynips oneratus*. Certain leaves pay their tribute in pearls, and others in rubies. This offers a semblance of a sea-weed, with a companion sponge growing by its side, while upon another near by a wriggling company, clad in crimson livery, seem to hold high carnival. A curious tableau this, alive only in the outward seeming, as a grotesque compensation, perhaps, for an animating spirit which you will vainly seek within, as this gall is apparently empty.

If you care to search, or even glance, among the creeping cinque-foils,

you can hardly avoid noticing the "beads" already mentioned, making those fruitless wiry stems to rival their cousin strawberry in their mimetic fruits. These are shown among our "Harlequin Fruits"—bright rosy or crimson berries to all appearance, growing in mid-stem, with the thwarted tips of the latter appearing at its summit, and winding off aimlessly—an adventurous truant shoot caught on the run, and taught to sing another tune. This gall has but one occupant, a true Cynips, and which, like any of its fellows, may be easily observed by gathering the galls in autumn, and keeping them in a box until spring.

Among the branches of certain wild roses there may frequently be seen another interesting specimen, suggesting an exaggerated form of the "caltrop" of ancient warfare, spiny balls, in which the thorny tendency of the foster stem has been sadly augmented. These, like the foregoing, are the strongholds of isolated individuals (the *Cynips bicolor*).

One of the prettiest products among our "Harlequin Fruits" is the famous bedeguar, a mossy spongiole common to the branches of the brier-rose, in consistency resembling the central contents of the oak-apple, only it is brilliantly and variously colored with green, pink, and crimson. It is the American prototype of the similar gall of Europe, there known also as "Robin Goodfellow's pincushion"—the work of *Cynips Rosæ*—and which has received a generous share of attention alike from the scientist and romancer. The particular mode by which these soft mossy fringes are shot out from the stem has been accounted for by various learned conjectures, but that tiny sponge continues to wipe them all out, and even yet defies and confounds the wise-heads. Another beautiful spongy hybernaculum is common on the white-oak, in its prime growth of a delicate creamy color studded with points of rose-color or crimson, the magic fruit of *Cynips seminator*. Why the spell of this particular fairy wand should invariably thus clothe the branch, investing this foster brood in a bed of moss, while in another instance incasing a similar charge within a cradle of wood armed with spines, is one of those mysteries which neither alembic nor microscope nor philosophy has solved. The stems of our raspberries and blackberries bear analogous excrescences, doubtless familiar to many of my readers who have strolled afield. One of these is a huge gall grub caravansary, if I may so speak, monopolizing the entire structure of the stem, and packed with its tiers and galleries of snug cells, each with its well-fed tenant (*Rhodites*). Verily the pulsating sap, which is thus compelled to

pay its toll both ways to this hungry host, has something to tell about below!

The bulbous swelling on the stems of the golden-rod, also pictured, is another common example of the home of a fly (*Acinia Solidaginis*). The aphides or diminutive plant-lice are held responsible for a long list of eccentricities, notably those rosy pouches pendent upon the leaves of our sumachs, the prickly bur upon the witch-hazel, the bulging ball



ELFIN PRANKS.

upon the aspen petiole. Many other insect tribes have their gall-making representatives, the beetles, two-winged flies, and the mites. A curious work of the latter is sometimes seen on birch, as well as other trees, consisting of dense, bunchy growths of twigs at the ends of the branches. The formation begins with a diseased growth of the mite-infested bud. The sap thus cut off at the terminal shoot throws out adventitious buds, which produce twigs that are likewise infested the following year, giving

rise at length to those confused masses called "Witches' brooms" by credulous country-folk. Indeed, the popular names, "Magic knot," "Witches' bur," "Witches' broom," "Robin's pincushion," and many others of a similar character, serve to illustrate the common superstition which these singular fruits have always awakened.

It is possible, in a work of this kind, only thus to hint at a few of the more familiar examples which meet us in our rural walks. Among these, however, we must not omit a further reference to one most conspicuous of all its tribe, the oak-apple, and which may here serve as an illustrative example of its kind. The oak-apple, fruit of the *Cynips confluentus*, is a hanger-on of the red-oak, appearing in the early summer, and usually adhering to some vein on the upper surface of the leaf. They are now of a pale green or a slightly rosy color, and if broken asunder are found to consist of a thin outer shell enveloping a greenish spongy mass, in the centre of which is a woody cell the size of a pea, containing a single whitish grub. This pulpy pseudo-fruit ripens with the leaf, and falls therewith in the autumn. The larva, now full-grown, changes to a pupa, and in the following May, in the semblance of its winged parent, makes its escape from a small round hole which it gnaws through cell and outer wall, and proceeds to exercise its peculiar prerogative as already described.

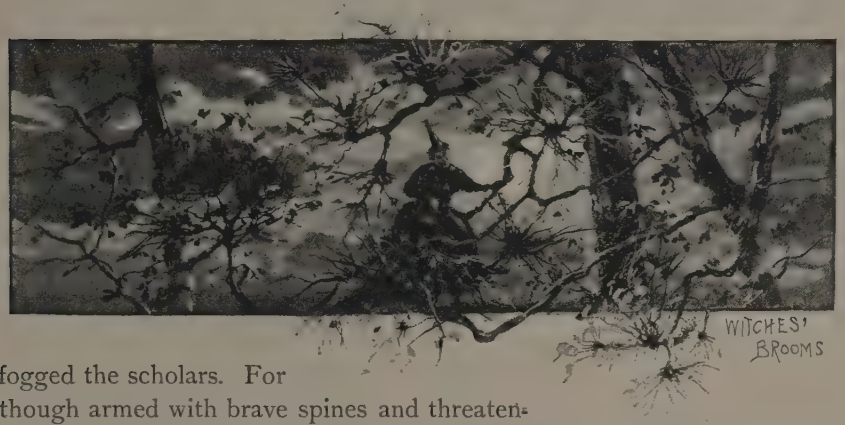
Though quite similar in outward appearance, these American oak-apples are not to be confounded with the same named gall of Britain—those "apples of royalty," gaudily gilded empty trophies, so intimately identified with the 29th of May ("Oak-apple Day"), and which, gathered, bedecked, and bartered by the patriotic rural youth of England, still "serve to perpetuate the memory of those their ancestral fruits, which hung in [sympathetic] company with a certain hunted monarch on the tree of Boscobel" some two centuries ago.

There would seem to be, moreover, from a figurative stand-point, at least, a singular antithesis in the geographical disposition of these two suggestive rival fruits—a sense of the natural fitness of things, recognizing in the American example, with its single ruling potentate, the more appropriate badge of royalty; while discovering in its European prototype no mean symbol of Columbia's republic, peopled with its independent democratic populace. But a closer observer than I,* perhaps,

* ACHETA DOMESTICA, Episodes of Insect Life.

one who knows the ground, and who has had better advantages for a close survey thereof, has apparently seen deeper into these transatlantic emblems. "The insect tenants of these pulpy palaces," says my author, "are not unlike, in one condition of their being, to the scions of royal houses. It is not improbable that before one of them has attained to the majority of its winged estate, all may be despoiled of their inheritance by a host of usurping parasites, such as in palaces reared by hands have often enacted a resembling part."

Yes, here is a fanciful allusion to a frequent incident in the history not only of the oak-apple, but of many, if not most, of its class—a phenomenon which, more than any other circumstance, has served to throw dust into the eyes of scientific research, and which for centuries be-



fogged the scholars. For though armed with brave spines and threatening spears, and bristling with *chevaux-de-frise*, or mailed with unbroken ivory, these bulwarks of defence reared by nature for the protection of the Cynips fosterlings still leave them at the mercy of invading foes. An omnipotent destroyer hovers near on filmy wing, and with covetous eye and insidious weapon pierces the very heart of its quarry, singling out its victims as deftly as though their protecting walls were limpid as glass. Thus, as I remarked once before as I strolled "across lots," no shelter among these "pulpy palaces" is a pavilion, no armor invulnerable; new guests are ushered into the tempting domiciles, unbidden patrons that proceed to eat the host at his own table and then usurp his luxury.

A certain experience of the indefatigable Reaumur well illustrates the difficulties which formerly beset the naturalists in the study of this

branch of entomology. Having determined to demonstrate by experiment the successive steps in the growth of a gall from the original puncture of the fly, he adopted the following expedient. A certain gall among his specimens, a rose bedeguar, had just yielded a large brood of flies. Within and through the box which enclosed them he inserted a growing branch of a rose-bush. Certainly the conditions were favorable to his enterprise, but he nevertheless looked in vain disappointment for any sign of his bedeguar, or even of an egg. On more careful investigation he now discovered that the buzzing brood were, in truth, not gall-flies at all, but a swarm of ichneumon parasites.

To one familiar with both insects, the distinction between the true Cynips and its usurper is easily drawn. Even in the aspect of color the difference is quite marked, the true gall-fly possessing comparatively little beauty, while the ichneumon is often a marvel of brilliant glitter—a winged gem.

The two rival heirs to our oak-apple throne may be readily observed by any one who will take the trouble to collect in the autumn a number of the galls, preserving them in a close-fitting box until spring, when the twofold genuine and spurious broods will make their appearance. Here you may see, side by side, the Cynips and the *Chalcid* ichneumon, the latter with gauzy, iridescent wings, bright red eyes, head of golden green, and thorax like a glittering emerald, with a nether body resplendent with changeable metallic blue, and provided at the extremity, moreover, with a marked distinction in the shape of a long, hair-like piercer twice the length of its body.

Besides the gall-flies, or *Cynipidæ* proper, there are other kinds of insects equally demoralizing to twigs and leaves. The cone-gall of our cordate willow, figured in our border group, is one of these harlequin productions, the work of a tiny gnat (*Cecidomyia strobiloides*). I am not aware that this tenement ever harbors a parasite, but on more than one occasion I have observed a chickadee enacting a similar function, as with skilful bill he probed the summit of the cone, and deftly removed from its depths its squirming, orange-colored tidbit. Another related species of insect plays its pranks upon the terminal bud of the osier, literally and fittingly evolving from the basket-willow a cradle for its young (*Cecidomyia Salicis*).

In consideration of our subject of galls we needs must mention, though we will not dally long, the notorious "Dead Sea Apples" of

antiquity, described as hypocritical fruits, which "tempt the eye, but turn to ashes on the lips," and now, after much learned discussion among the commentators, generally conceded to be the product of a species of gall-fly infecting the oaks of the Orient. We will also merely allude to those, their companionable fruits, the prosaic chemical commodity of commerce, nor dwell upon their sombre potency, save in an apologetic and figurative sense; for in hovering among the galls, as loftier quills than ours have done before, we may be pardoned if our pen "possibly be carried from the dry land of simple fact by some spirit of fiction in our ink—an infusion, it is likely, of gall-nuts, the produce of the East, the very region of romance."

How naturally, then, urged equally by fact and fancy, do we revert to the time, the place, and the theme of Pandora. Is there not still at large among us an all-potential energy, of which the mischievous Cynips is but a material though insufficient type, whose wings have "put a girdle round about the earth," whose ways are as insidious and as elusive, and whose ends as treacherous—whereby the thorns upon the rose of life are multiplied, buds of promise blighted, worthy tendencies warped, and noble purpose made to minister to deformity and hypocrisy?

How many, then, are the excrescences—the infirmities, the blots, the blemishes, in fine, the false and vicious fruits for which that open, empty casket is responsible! Yes, Pandora set the mischievous goblins free, but their escape was yet due to that antecedent kinship which toyed with the alluring knot.



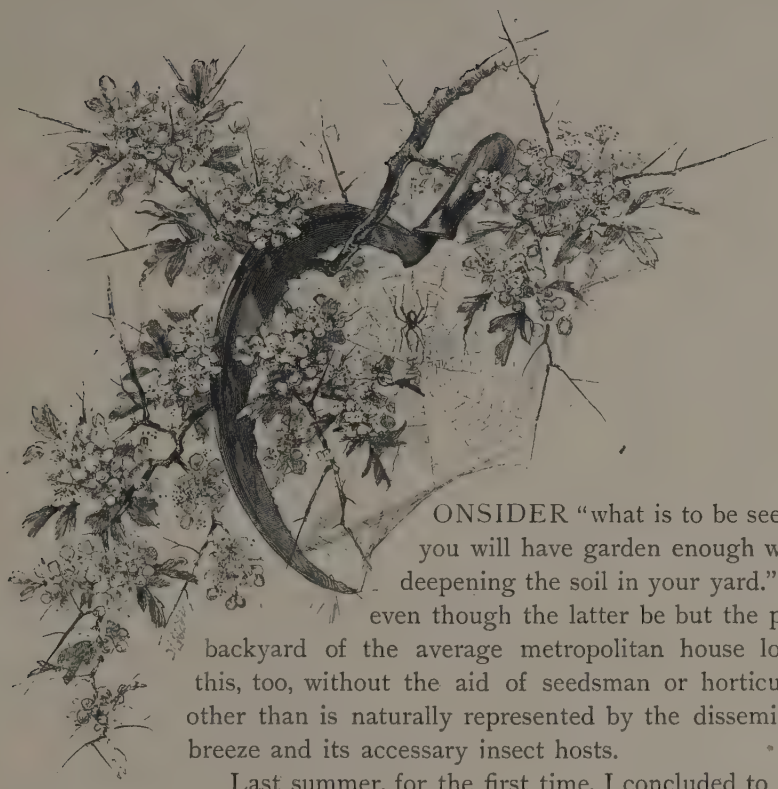
MORE servants wait on man
Than he'll take notice of. In every path
He treads down that which doth befriend him.

GEO. HERBERT.




BACKYARD STUDIES





CONSIDER "what is to be seen, and you will have garden enough without deepening the soil in your yard." Yes, even though the latter be but the prosaic backyard of the average metropolitan house lot, and this, too, without the aid of seedsman or horticulturist other than is naturally represented by the disseminating breeze and its accessary insect hosts.

Last summer, for the first time, I concluded to forego the customary sickle, and, even at the risk of curious and fastidious scrutiny of my neighbors, to allow my backyard to follow its own sweet will. Judging from the evidences of former years, I had some reason for anticipating no mean counterfeit of a bit of country meadow beneath my windows. And so it proved; for, be it known that while by common consent these squares of turf are dignified by the name of "grass-plots," the grass is often in a singular minority, more often having to dance attendance to a congress of plebeian aliens, the natural progeny of their native soil, in the shape of a cart-load of secretive sods, transported thither by the guileless contractor, whence can only be conjectured by the telltale crop.

Before the spring had fairly passed, my wild garden had more than fulfilled the promise so disregarded in former years. The early grass at first held undisputed possession, spreading its verdant coverlet like an

emerald plush, jealously concealing all aspirant rivals beneath, and tufted close with the golden buttons of the dandelions.

Then followed the blooming grasses, the ruddy-blossomed sorrels and white clover, whose combined fragrance floated in at our windows on the fragrant hum of bees, if I may so speak, for the honey-bee is the inseparable companion of the white clover, and the hum of these wings seemed but the energy of its fragrance syllabled to sound, the audible voice of the clover's breath. Each successive day now brought to view new faces, till, refreshed and nourished by the frequent summer showers and an occasional spray from a lawn sprinkler, my backyard possessions soon revelled in wild and succulent luxuriance.

It now happened that on a certain evening, having returned from a jaunt in suburban woods with a bouquet of some rare plants for analysis, a friend whom I had previously initiated into the mysteries and delights of botany dropped in and surprised me at my work.

"Oh, where did you get them?" exclaimed she, observing the wild flowers. "I long to follow up the botanical study of our native wild flowers which I began so bravely and enjoyed so much in the country last summer; but what hope is there for us poor unfortunates who are tied down in the city for eleven months in the year?"

"Have you a backyard?" I inquired, with honest solicitude.

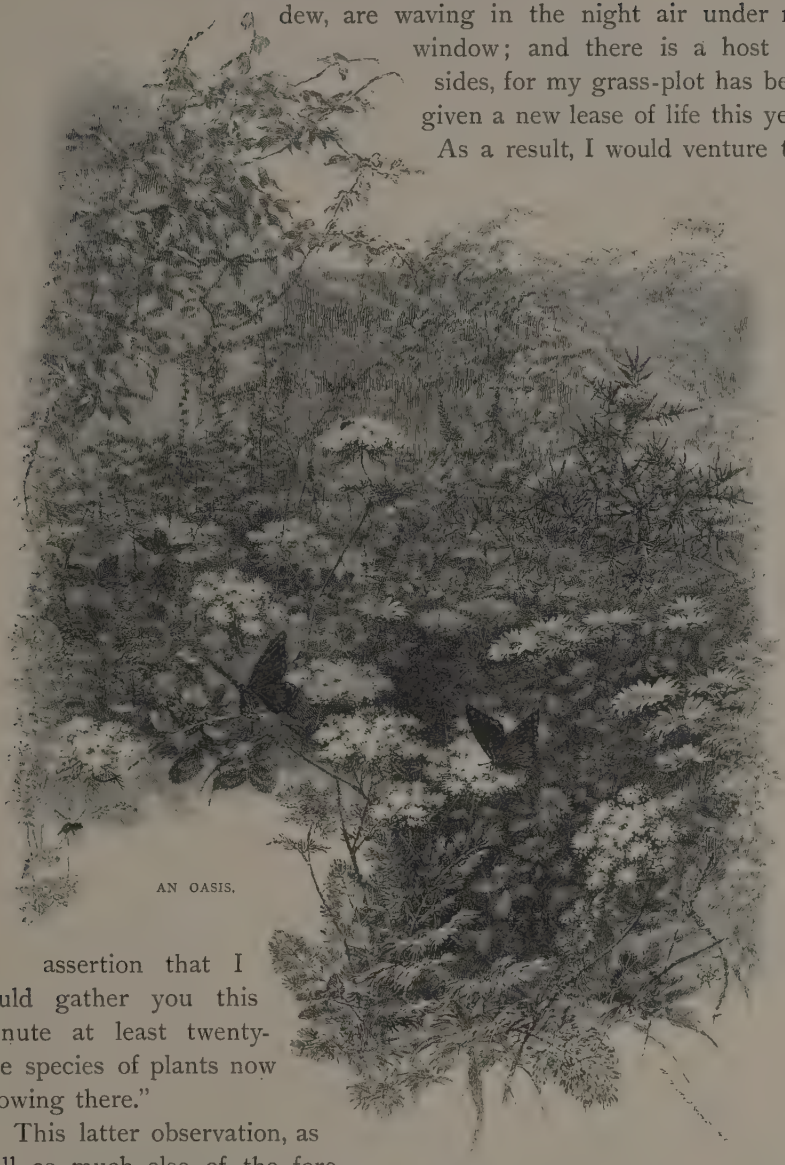
"Certainly," replied my friend, greatly amused.

"Then, even though you remain in the city, yes, even without going beyond your front door, you may find abundant occasion for the use of your botany during your spare hours for the rest of the summer. Your backyard may yet prove the more beneficent half of your city lot, if you will but give it an equal chance to contribute to your enjoyment.

"Look at these parties of returning pleasure-seekers wheeling by with hands and laps overflowing with all manner of meadow blossoms and grasses gathered in the suburbs! All day long this pageant has passed my door; and for days to come you might observe, almost with pity, the fondness with which these same flowers, arranged, rearranged, and winnowed, are cherished until the last one is withered and gone, while the barren, close-clipped grass-plot everywhere beneath the windows lies scorching in the sun in mute reproach.

"For there is nothing which is brought home in these wild bouquets but what may exist in the undeveloped possibilities of that baked sod. Even now these same daisies and red clover, exuberant, and laden with

dew, are waving in the night air under my window; and there is a host besides, for my grass-plot has been given a new lease of life this year. As a result, I would venture the assertion that I could gather you this minute at least twenty-five species of plants now growing there."



AN OASIS.

This latter observation, as well as much else of the foregoing, was naturally accepted with much incredulity. To tell the truth, I had aroused my own curiosity, and on the following morning I concluded to test the truth of my claim by a demonstration. Accordingly,

with pencil and note-book, I made a careful inspection of the tangle of vegetation, and surprised myself with the discovery of the following species there assembled.

The size of the plot of turf is about twenty-five by twelve feet, the vegetation often extending into the crevices between the flagging of the surrounding walks.

The list is as follows — a spontaneous outburst:

Red Clover..... *Trifolium pratense.*
White Clover..... *Trifolium repens.*
Black Medick..... *Medicago lupulina.*
Vetch..... *Vicia sativa.*
Pasture Thistle (one plant)..... *Circium lanceolatum.*
Canada Thistle (two plants..... *Circium arvense.*
Dandelion..... *Taraxacum dens-leonis.*
Chicory..... *Cichorium intybus.*
Fall Daisy Flea-bane. *Erigeron annuum.*
Daisy..... *Leucanthemum vulgare.*
May-weed..... *Maruta cotula.*
Roman Wormwood... *Ambrosia artemisiæfolia.*
Golden-rod..... *Solidago Canadensis.*
Golden-rod..... *Solidago altissima.*
Golden-rod..... *Solidago lanceolata.*
Yarrow..... *Achillea millefolium.*
Chick-weed..... *Stellaria media.*
Mouse-ear Chick-weed *Cerastium vulgatum.*
Plantain..... *Plantago major.*
English Plantain..... *Plantago lanceolata.*
Viper's-bugloss..... *Echium vulgare.*
Wild Carrot..... *Daucus carota.*
Buttercup..... *Ranunculus acris.*
Cranesbill..... *Geranium maculatum.*
Wood-sorrel..... *Oxalis stricta.*
Purslane..... *Portulaca oleracea.*
Spotted Spurge..... *Euphorbia maculata.*
Smart-weed (small plant)..... *Polygonum hydropiper.*
Sour-grass..... *Rumex acetosella.*
Moth-mullein..... *Verbascum blattaria.*
Shepherd's-purse..... *Capsella bursa-pastoris.*
Goosegrass (two varieties)..... *Polygonum aviculare.*
Pig-weed..... *Amarantus retroflexus.*
Green Amaranth..... *Amarantus hybridus.*
Jerusalem Oak..... *Chenopodium botrys.*
Knawel..... *Scleranthus annuus.*
Field Mustard..... *Sinapis arvensis.*
Pepper-grass..... *Lepidium Virginicum.*
Carpet-weed..... *Mollugo verticillata.*
Spiny Clot-bur..... *Xanthium spinosum.*
Morning-glory (seedling from flower-bed)..... *Ipomea purpurèa.*
Sweet-alyssum (seedling from border plants)..... *Alyssum maritimum.*
Ailantus (seedling)..... *Ailanthus glandulosus.*
Timothy-grass..... *Phleum pratense.*
Redtop-grass..... *Agrostis vulgaris.*
Vernal-grass..... *Anthoxanthum odoratum.*
Rye-grass..... *Lolium perenne.*
Low Spear-grass..... *Poa annua.*
Bent-grass..... *Agrostis alba.*
Foxtail-grass..... *Setaria viridis.*
Bristly Foxtail-grass. *Setaria italica.*
Finger-grass..... *Panicum sanguinale.*
Crab-grass..... *Eleusine indica.*
Lead-grass..... *Eragrostis pœoides.*
Orchard-grass..... *Dactylus glomerata.*
Hair-grass..... *Aira flexuosa.*
Meadow Foxtail-grass *Alopecurus pratensis.*
Cheat-grass..... *Bromus secalinus.*
Couch-grass..... *Triticum repens.*
Bird's-nest Fungus.... *Crucibulum vulgare.*
Mushroom.
Unknown or doubtful, 3.
Total of species, 64.

Among this list there will doubtless be discovered a few whose presence will naturally strike the botanist as especially remarkable, notably the cranesbill and the three varieties of golden-rod. In regard to the

latter a word will not be amiss. During the first season of my ownership, I had observed in my grass-plot what appeared to me a young plant of *Solidago altissima*, and another which had all the look of a golden-rod, but of which I was in doubt. The sickle cut short my surmises, but the more recent developments satisfied me that my conjectures were right. As to the *S. altissima*, I am well assured this was brought in the sod probably by the root. As to the others, I need look no further than a favoring breeze to have floated the downy seeds into my territory. Stranger windfalls than this have come to me.

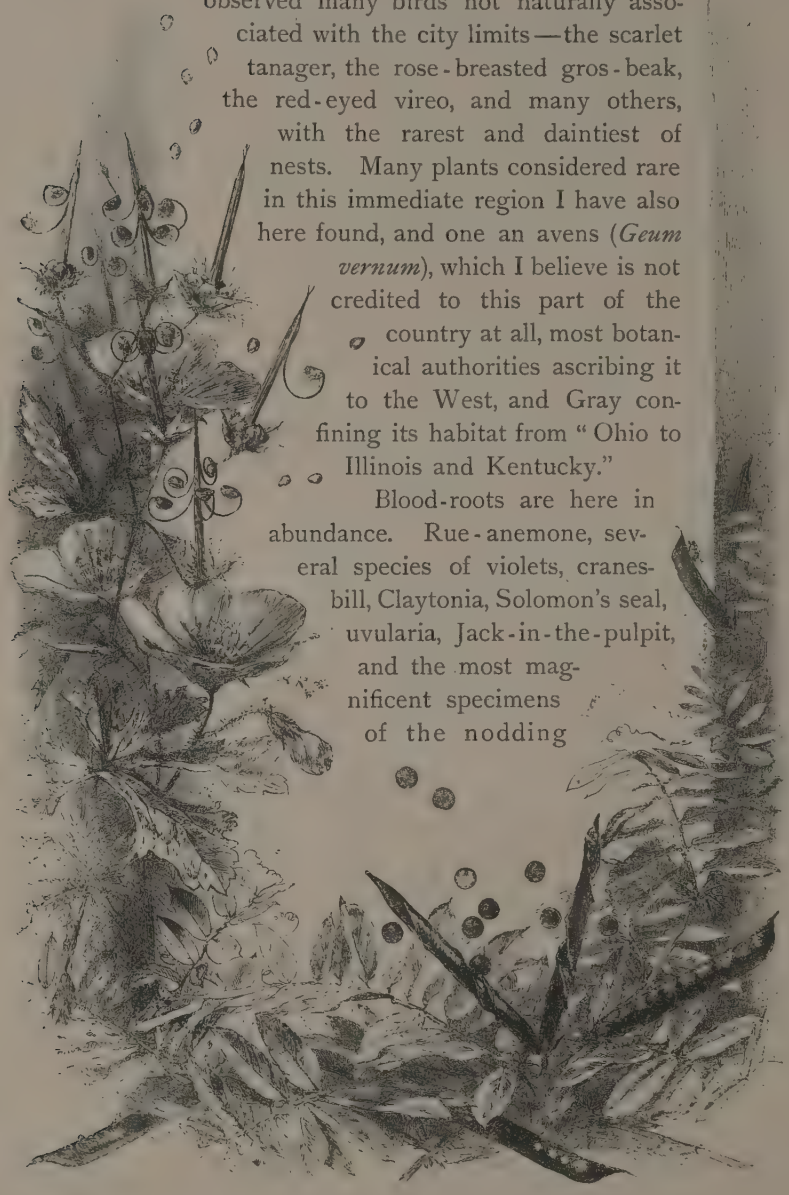
On the fifth of April last, a woodcock was found dying in my yard. A deep, cruel gash had laid open its cheek and neck. Instinctively I thought of the mischievous telegraph wires, and looking aloft I discovered a clumsy twisted juncture with two jagged projecting tips, and suggestively enough from one of these a feather fluttered in the wind.

Within a fifteen minutes' walk from my house, I know a spot where, on any day after August 1st, I can gather from three to seven species of golden-rod without half trying, and these, too, as regal specimens as could be found on any roadside in New England. One specimen of *S. Canadensis* which I brought home and measured showed a height of nine feet. This same heroic size obtains among other vegetation in general. It is a perfect paradise of weeds, as witness the following extract from my notes of a winter walk in this neighborhood: "Passed through a bare jungle of great rag-weed (*Ambrosia trifida*). Specimens of enormous size growing in soil rich with infiltrations of neighboring compost. Measured one tremendous stalk, which was three times my own height plus a tip of about ten inches, equivalent to a total altitude of eighteen feet four inches. Many were found twelve feet in height, ten feet being a common elevation." And here is another, inasmuch as I might as well die for a sheep as a lamb: "Huge poke-weeds (*Phytolacca decandra*) over ten feet high, by measurement with rag-weed stalk. One stem measured with strip of grass, and afterwards verified by a tape-line, gave seven and a quarter inches in circumference."

It is worth mentioning as showing what possibilities may lurk even within city walls. This retreat is one of my favorite city haunts. As I have said, it is readily accessible, being but a deserted corner of our Brooklyn park as yet unreclaimed, and whither few are sensible enough to be tempted, and which is blessedly innocent of the gardener. Once in its midst, and I might as well be in the Berkshires so far as any metropolitan

evidences are concerned. Herein I have observed many birds not naturally associated with the city limits—the scarlet tanager, the rose-breasted gros-beak, the red-eyed vireo, and many others, with the rarest and daintiest of nests. Many plants considered rare in this immediate region I have also here found, and one an avens (*Geum vernum*), which I believe is not credited to this part of the country at all, most botanical authorities ascribing it to the West, and Gray confining its habitat from "Ohio to Illinois and Kentucky."

Blood-roots are here in abundance. Rue-anemone, several species of violets, cranesbill, Claytonia, Solomon's seal, uvularia, Jack-in-the-pulpit, and the most magnificent specimens of the nodding



CRANESBILL AND VETCH.

anemone (*nemorosa*) I ever beheld, growing in dense verdant clumps two or three feet across, and with flowers of such unusual dimensions as almost to entitle the plant to be considered a distinct variety. Seven species of golden-rod are to be seen here within the space of a few rods.

In view of this latter fact, as a coincidence, it is not a little strange, considering the event of the wounded bird just related, that on two separate occasions I have started up his very counterpart among the jungle of these golden-rods; once having approached so near as to have seen him probing the black loam with his long bill, in a moist bog beneath some blooming elders. A natural haunt of a woodcock within ten minutes' walk from my city door! Surely if *he* could have singled out my backyard for his final resting-place, and thus fallen to my lot, as it were, why not then one chance winged seed from their millions of *Solidago Canadensis* and *S. lanceolata*. As to the cranesbill the case is somewhat different, as I shall presently show; for while the plant revelled in abundance in this most congenial habitat, empurpling the underwood with its profusion of delicate lavender blossoms, the conditions of its dissemination are not such as would naturally have brought my dooryard within its territory. Concerning the rest of the list, however, I see no reason to doubt that it might be duplicated or even bettered by the average city plot. The list, indeed, falls far short as an index of the natural vegetation abounding in the neighborhood, and there were several elsewhere common plants which I missed. For example, neither the dock nor burdock was to be noted, although several lusty plants grew not a hundred feet from my house. In a near neighbor's yard I noticed a plant of thorn-apple (*Datura stramonium*), which, however, soon fell a victim to the ubiquitous gardener. In another plot I observed plants of canary-grass (*Phalaris canariensis*) and toad-flax (*Linaria vulgaris*), both of which were not unfrequently to be met with among the neighboring vacant lots. The Indian mallow (*Abutilon avicennæ*), cockle-bur (*Xanthium strumarium*), hedge-mustard (*Sisymbrium officinale*), and creeping-mallow (*Malva rotundifolia*) were all common in the locality, as well as a large number of other weeds and grasses—"self-sown, and therefore despised"—which might most naturally have been looked for in my backyard assemblage, and many of which I fully believe will yet show themselves.

Recurring to the cranesbill plant, its presence doubtless had some intimate connection with my back windows. And I am glad that, puny

and discouraged as the little waif proved—a stranger in a strange land, and having no heart to blossom—it has at least furnished me an opportunity of touching upon its peculiar contribution to the mechanical contrivances of plants in the dispersion of seeds. In a previous chapter I have alluded to the remarkable power of the witch-hazel pod, which commonly propels its hard nutlets to a distance of twenty feet and more. The projectile power in that instance is exerted by the compression of two opposing elastic walls of the gaping nut—a force such as may find a common illustration in the expulsion of an apple-seed from between the finger-tips. The capsule of the violet thus expels its seeds—often ten feet or more. In the cranesbill the mechanism is of a different character. It is of the nature of spring power, and may be likened to the catapult of antiquity, *i. e.*, the sudden release of a compressed spring. The full powers of this tiny quintuple catapult of the cranesbill, I think, have never been fully appreciated. The design of these reflexed arms has always been perfectly obvious at a glance, but it is only comparatively recently, when walking in the midst of the retreat in the park already described, that I became fully aware of their energy.

It was a still, sultry day in the latter part of June, the atmospheric conditions being doubly auspicious for such a discovery, not only on account of the heat, which so increased the hygrometric tension of the fast-ripening pistils, but also owing to the perfect stillness, which made the fall of every seed manifest by its commotion among the leaves. They were quivering right and left. Occasionally a stray missile would strike my face or hand. Altogether the cranesbills were having a time of it; their volleys kept up an incessant bombardment, and the sympathetic leaves danced as though to the tune of an April shower. Indeed, my first thought was of approaching rain. Curious to investigate the matter further, I picked a large number of the fruiting stems and carried them home for experiment. Shutting them between the leaves of a large book, I placed them on the floor in a front spare room, at an angle calculated to give them full range for action.

The white cloths spread upon the floor were soon peppered to the distance of ten feet, and observing that many of the seeds fell from a rebound against the end wall, as well as the ceiling of the room, I opened up the passage-way to an adjoining apartment, and a few hours later here discovered a half-dozen of the black seeds over thirty feet away from their original position. It is hardly improbable that one of

them more ambitious than the rest succeeded in reaching the open window and made the jump into my grass-plot.

The *modus operandi* of this process, I think, will be made clear by a little study of the accompanying illustration, in which the pistils are shown in their various stages of development. The word pistil—for the benefit of those readers who may not be conversant with botanical terms—refers to the seed-vessel, including seeds and all accessaries, from whose peculiar shape in the present instance the plant has derived its name. It consists of a central column surrounded at the base by the five seed capsules, each containing a single seed, and provided with an elastic wiry appendage extending upward, and in the immature pistil are joined at their edges around the central column, becoming permanently united at the apex. As the ripening process proceeds, these edges become detached from each other, and the entire pistil is soon rigid in a high degree of reflex tension. This condition first shows itself at the base, where the five tiny capsules are seen to release their hold at the lower edge and turn outward horizontally, held only to the central axis by their inner edge. The under surfaces of the capsules now open, converting each cell into an inverted cup. It will naturally now be asked, what prevents the loose enclosed seed from falling out? And here we see a most exquisite and dainty provision of Nature in a minute fan-shaped tuft of silky hairs which spreads across the opening from its outer



A FUSILLADE FROM THE WOOD-SORREL.

edge, which, while barely sufficient to retain the weight of the seed, is easily overcome by the momentum imparted when the rigid spring is finally released.

A similar mechanism exists in many other geraniums. In the pretty herb-robert (*Geranium Robertianum*) the entire tensile appendage flies off, and the seed, provided with a long silky tail, is released, and hurled to considerable distance: Sir John Lubbock says more than twenty feet, and this limit has been verified by my own experiments. I found one of the silky seeds hanging on the upper edge of the trim of a door nearly fifteen feet distant from the plant.

My backyard afforded me other interesting lessons in Nature's curious methods of seed-dispersion. A plant of the common vetch (*Vicia sativa*) rambled over the clovers in one end of my plot, showing an occasional pinkish blossom and a number of long black pods. The tension here is of a spiral sort, the two valves of the pod suddenly bursting asunder in convolute form, casting the round black seeds a rod or more. I glory in the thought that my neighbor's yard—could he only appreciate it—is likely to be richer for the coming year by a goodly posse of these rambling but instructive vagabonds, though, alas! the keen-eyed but blind gardener will doubtless be the first to discover them.

Another still more interesting disclosure occurred in the little plant called the wood-sorrel (*Oxalis stricta*), which abounded in my yard. Most people are familiar with the jumping pods of the common jewel-weed (*Impatiens*), or *noli-me-tangere*, in the significant Latin phrase, belonging to an order of plants noted for their impetuous treatment of their offspring. But I have as yet noticed no mention of this singular disposition in the wood-sorrel, whose pods, in general shape, bear some resemblance to those of the *Impatiens*. The mechanism of expulsion of the seed, however, is by no means as obvious.

These pods were present in abundance among their trifoliate leaves. Chancing to pick a stem of mature specimens, I was suddenly confronted with a demonstration such as I have pictured. Selecting a fully ripe pod at random, I had only to tap it with my finger to bring about in response just such an instantaneous fusillade. Once I observed a small but too inquisitive fly blown into mid-air by the explosion from within, which had probably been touched off simply by the agitation of his tiny foot.

The demonstration commonly begins at the base of the pod, and con-

tinues upward, each individual seed furnishing in its explosion the required incentive to its neighbor. For some time I was puzzled to account for the phenomenon. Two distinct forms proceeded from the pod. One a small red seed, and the other a queer whitish duplex pouch. A ripe pod laid on a table would jump about as if alive while expelling the seeds, the latter not being seen at all, so swiftly were they ejected.

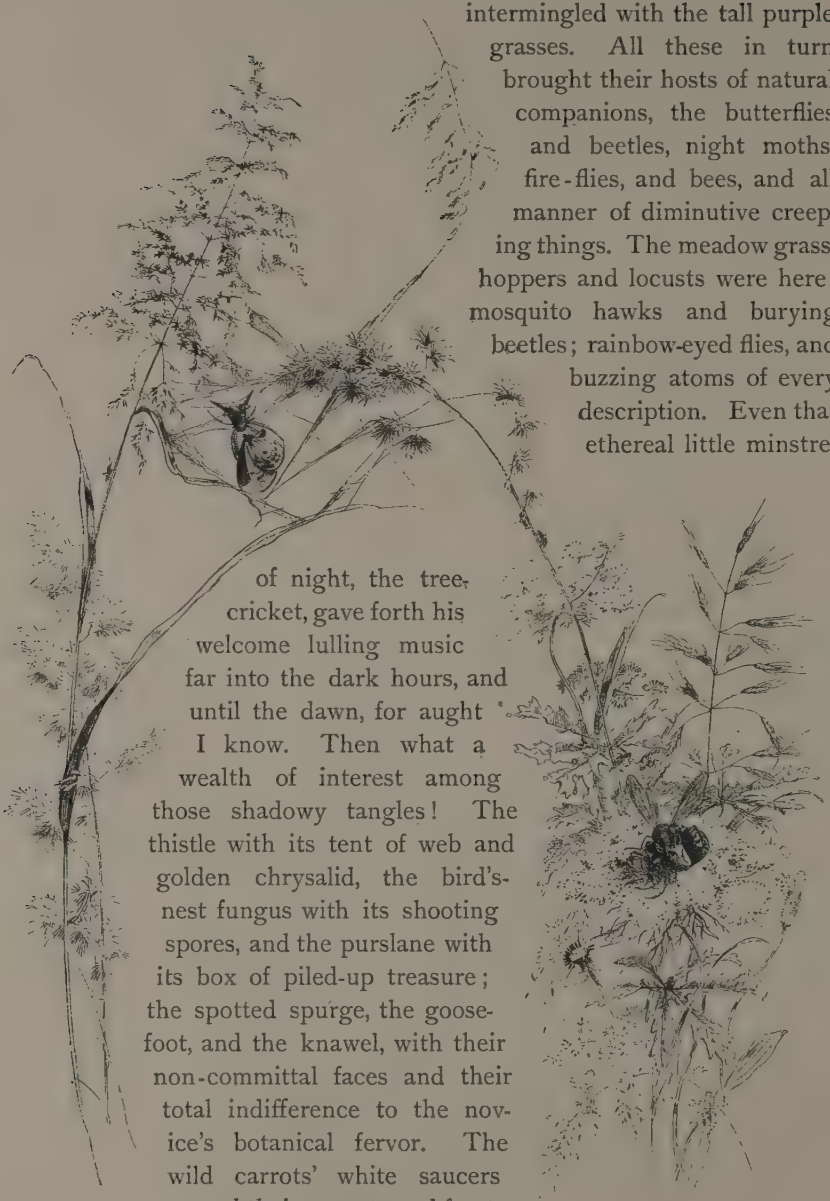
Seeds forcibly dislodged from a less ripe fruit, falling upon the paper beneath, exploded and disappeared, occasionally leaving one of the tiny pouches already mentioned. Fixing my eye on a single seed, it would suddenly entirely vanish as if by magic.

At length, capturing one of the sprightly atoms between my finger-tips, I closely inspected it, and soon discovered the key to the mystery. The ovule proper was incased in a transparent aril, or close-fitting sac, which, bursting at the apex and dividing for some distance, reflexed upon itself elastically, and thus expelled the enclosed seed. This is indicated minutely at the base of the illustration. The pod is divided into five upright cells, each filled with a single row of seeds. The outer edge of each cell is very thin, and open from summit to base by a fine fissure, naturally appearing closed, but readily yielding to pressure from within. The aril bursts within the pod at the outer edge, reverses upon itself, casts out the seed, and by its own reflex action on the walls of the cell expels itself also, the edges of the cell immediately closing in the most innocent fashion.

The best time to observe this little exhibition, I think, is in July, or later, the pods fruiting at this season being larger and fuller than those ripened from the earlier and more perfect flowers, the *Oxalis* being one of those strange instances of plants—like several of our violets—which bear a supplementary crop of small inconspicuous flowers, sometimes without petals, and completely hidden within the tightly-closed calyx, but which are, nevertheless, often the most prolific in the propagation of seed.

By midsummer my wild garden had laughed the bricks and mortar to scorn, and had begun to sing in its prison walls. It fairly bubbled up with exuberance, like the outbursting of some subterranean spring fresh from a happy New England meadow. Buttercups and daisies, milfoil, clovers, and thistles, and the blue stars of the chicory,

"Succory to match the sky,"



A HARLEQUIN SPIDER.

THE BITER BIT.

intermingled with the tall purple grasses. All these in turn brought their hosts of natural companions, the butterflies and beetles, night moths, fire-flies, and bees, and all manner of diminutive creeping things. The meadow grasshoppers and locusts were here; mosquito hawks and burying beetles; rainbow-eyed flies, and buzzing atoms of every description. Even that ethereal little minstrel of night, the tree-cricket, gave forth his welcome lulling music far into the dark hours, and until the dawn, for aught I know. Then what a wealth of interest among those shadowy tangles! The thistle with its tent of web and golden chrysalid, the bird's-nest fungus with its shooting spores, and the purslane with its box of piled-up treasure; the spotted spurge, the goose-foot, and the knawel, with their non-committal faces and their total indifference to the novice's botanical fervor. The wild carrots' white saucers spread their accustomed feast, each serving up in its centre

that mysterious purple morsel of a flower, a tiny tidbit, which I observe, however, has proved too formidable for scientist or seer.

Then there were many curious and interesting incidents of insect life among these grassy jungles. The well-known story of the ants and the aphides, first related by Huber, was daily enacted upon the stems of my thistles and other plants, where, also, voracious aphis-tigers made havoc among these little "milch cows" so generous with their honey-dew. There were filmy lace-wing flies that poised their tiny pellucid eggs on fringy stems as delicate as cobweb. There were strange harlequin spiders and gossamers, artful leaf-cutting bees and wily ichneumon flies. What a volume might be written on the arcana of a tuft of grass!

Among the earliest of the flowers to beguile my leisure hours were my dandelions. The cycle of this blossom, from its first unfolding to its smoky phenix, is full of interest. The peculiar movements of the flower from day to day; the retiring of the conscious fading blossom; its long retreat among the lowly leaves, and its beautiful resurrection, had long won my admiration. I now yielded to the promptings of scientific fervor, and set to work to determine the exact length of time represented in these interesting movements.

The first appearance of the dandelion plant discloses a flat rosette with a few flower-buds in the centre. The earliest blossoms, coming while the surrounding grass is but a few inches in height, lay close in the rosette. The later ones for a little time rise to the occasion, and keep to the general level, and it is interesting to note the consciousness of this reclining stem, which, lowering to the ground with its faded blossom, anticipates the general progress of growth, until at the appointed time it is enabled to reach up from obscurity and expand its ethereal globe high among the grass-tips.

It was not until a few of these downy balls had made their appearance in my grass-plot that I was prompted to make my experiments. Selecting a dozen buds which were about to open, I gave them each a badge of red worsted tied around the neck. This was on May 28th. The disclosures which followed were quite interesting, and I will give them from my notes.

May 28th.—Several buds labelled.

May 29th.—Flowers opened for the first time and continued in bloom until ten o'clock.

May 30th.—Opened again. Stem slightly lengthened, and reclined a trifle away from centre of rosette.

May 31st.—Bloomed again. Stem considerably lengthened, and flower declined perceptibly towards outer edge of rosette.

June 1st.—No flowers open. All ceased blooming, and taking a back seat to make way for others. Plainly sinking towards ground.

June 2d.—Bending still lower. Stems blushing pale crimson on exposed specimens.

June 3d.—Still declining among leaves. Dross of withered petals protruding, pushed from calyx by lengthening pappus of seeds. Stems in many specimens reddened to deep crimson.

June 4th.—Still lower. Hiding among leaves. Many specimens lose their dross, the protruding white pappus appearing at summit of calyx.

June 5th.—A slight upward inclination observable in several specimens.

June 6th.—No particular change; some stems apparently lengthening.

June 7th.—The exaltation begins. Nearly all the heads lifting.

June 8th, 9th, 10th.—Stems straightening and heads lifting more and more each day.

June 11th.—The ethereal ball expands.

It would thus appear that the dandelion blooms for three consecutive days (what the result would have been in the event of rain I did not have the opportunity to ascertain); that during the following three or four days the withered flower continues to decline outwardly until it reaches the ground. Here it reposes among the shadows for about two days, when it throws off the withered petals and begins its ascendency. About five days are occupied in this stage, and on the following, or fourteenth day from first blossoming, inclusive, it completes its round of existence.

There is more than ordinary significance, moreover, in the figure of that downy ball. It is but the type in miniature of the kingdom covered by its buoyant wings, for those winged seeds have floated round the globe, and the dandelion is at home on every continent. It is apparently Anglo-Saxon in its preferences, however. In North America and Britain it is the "dear common flower," but it extends more or less plentifully all through Europe, temperate Asia and Africa. It has settled in the Orient, is at home in Algeria and the Azores, and in a dwarfed form is found snugly quartered high into the Arctic regions of both hemispheres.

But it has evidently had to draw the line somewhere, it never yet having been known to float across the equator; doubtless it has tried, but the tropic breath has singed its wings and it has fallen short of its destination. The dandelion would seem to have a natural aversion to extreme heat. At the mild season of its prime,—

"First pledge of blithesome May,"



A NOVEMBER FLOWER.

it opens early in the day, and before the sun has had half a chance to look it in the face, it closes its eye. As the warm summer days draw on, how seldom do we see a dandelion! but, later again, in September and October, as the sun's glances become less ardent, they take courage and look out again from the fading grass. I have seen the Indian summer set with dandelions, and occasionally these yellow petals encroach on the season of the witch-hazel, and in December divide the honors with the true winter blossoms of the woods. In Brooklyn, four years ago, the dandelions joined hands all around the calendar. I picked a bouquet from a vacant city lot in January, and noted the blossoms every month in the year. Nature would seem to have signified her special favor for this darling, and to have spared no pains to insure its perpetuity. Few flowers are more fully equipped with devices by which to secure the fertilization and dispersion of their seeds. The bright color of the blossom and its abundance of honey have made it a favorite with a host of insects other than that luxurious "yellow-breeched philosopher" which we so naturally associate with this plumy bed. Hermann Müller noted and specified no less than two hundred and thirteen distinct species of insects which were frequent visitors to the dandelion, and I myself last summer counted five different kinds of insects simultaneously partaking of its bounty.

Indeed I could fill a good-sized book with

the few months' record of my grass-plot; but even so, how much of its most essential tribute must still remain unwritten! Prosaic, at best, though it may appear, it still served to lighten a little the burden of care; to fill many a leisure hour with pleasant profit, and lead my spirit into serene and restful places far from the teeming city's dust and din.

Often there recurred to my thought, now with renewed significance, a familiar passage from one of my favorite books — words which I found might now claim a larger field of beneficence than I had before accorded them — in a sense as pertinent and precious here among the grim city walls as in the solitudes of Walden:

"Yet I experienced sometimes that the most sweet and tender, the most innocent and encouraging, society may be found in any natural object, even for the poor misanthrope and most melancholy man. There can be no very black melancholy to him who lives in the midst of nature and has his senses still. Nothing can rightly compel a simple and brave man to a vulgar sadness. While I enjoy the friendship of the seasons, I trust that nothing can make life a burden to me."

I am reminded too of that quaint sentiment of good old Gerarde, touching upon the beneficent influence of the society of flowers. "For flowers," he says, "through their beautie, varietie of color, and exquisite forme, do bring to a liberall and manly minde the remembrance of honestie, comlinesse, and all kind of vertues."

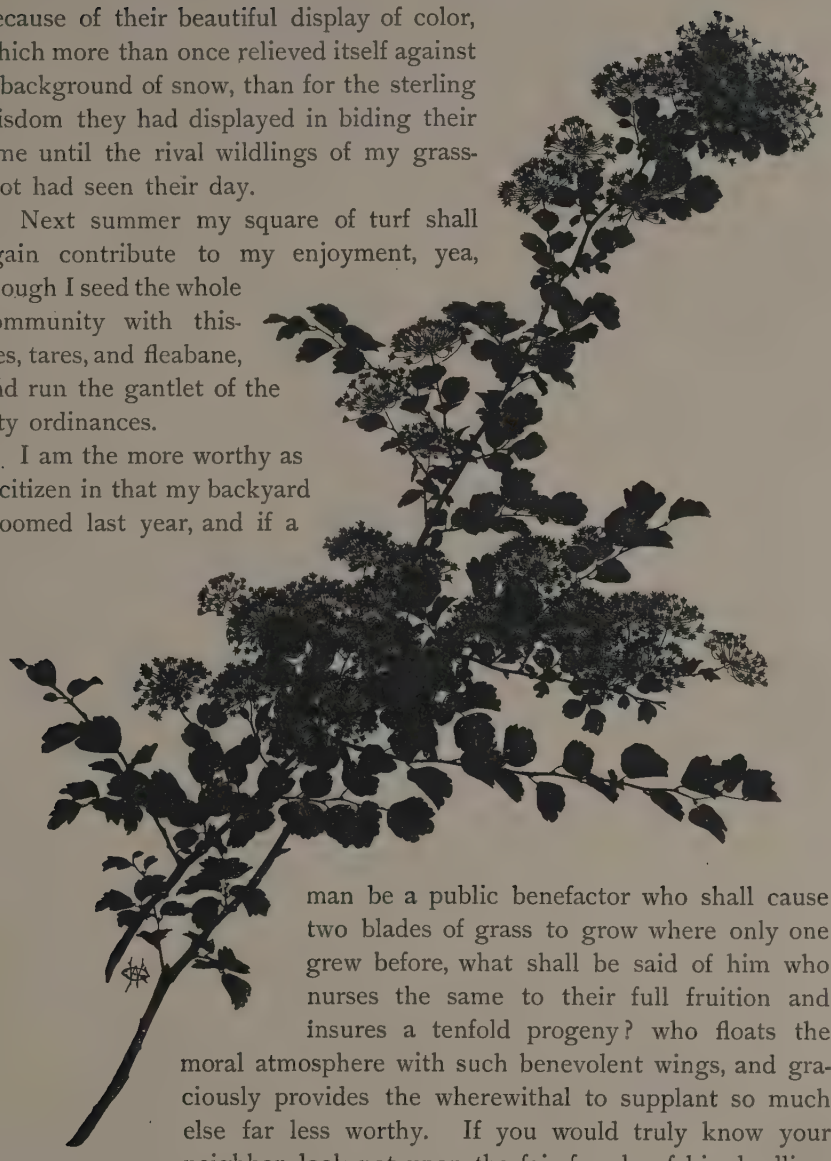
Thus would the unencumbered half of our urban possessions come to our rescue, and seek to redeem the average among this unworthy total of the city's pomp and conventionality; to reflect somewhat of a sweeter simplicity and minister to a more generous and genuine philosophy. Thus may the backyard, in truth, become a means of grace, and with its welcome, peaceful symbols of the road-side and the hay-field, the wood-path, pasture, and the farm-yard, serve to reawaken and console the latent yearning of our unfortunate metropolitan exile.

With the possession of a backyard, then, there is still hope for the most case-hardened cit. Let the quickened sod have its freedom of expression, and the grasses and weeds a respite from the sickle. Give the cold shoulder to the gardener, or, if need be, confine his arts to the fence border, and if you would repeat my experience, let the chrysanthemum claim the chief part of his attention. Twenty-five varieties of this plant bloomed in my borders last season, and they won my admiration, not less

because of their beautiful display of color, which more than once relieved itself against a background of snow, than for the sterling wisdom they had displayed in biding their time until the rival wildlings of my grass-plot had seen their day.

Next summer my square of turf shall again contribute to my enjoyment, yea, though I seed the whole community with thistles, tares, and fleabane, and run the gantlet of the city ordinances.

I am the more worthy as a citizen in that my backyard bloomed last year, and if a man be a public benefactor who shall cause two blades of grass to grow where only one grew before, what shall be said of him who nurses the same to their full fruition and insures a tenfold progeny? who floats the moral atmosphere with such benevolent wings, and graciously provides the wherewithal to supplant so much else far less worthy. If you would truly know your neighbor, look not upon the fair façade of his dwelling, but seek to learn something of his backyard. Each of these has its allotted field, often with the same opportunity as its neighbor, and yet how diverse is their showing. I have frequently



A SILHOUETTE.

amused my fancy with the various mental portraitures called up by my contemplation of the suggestive door-yards which came within the limits of my vision — and, by-the-way, this same privilege, now that I think of it, would seem to have been exercised by many other solicitous philosophers in my close vicinity.

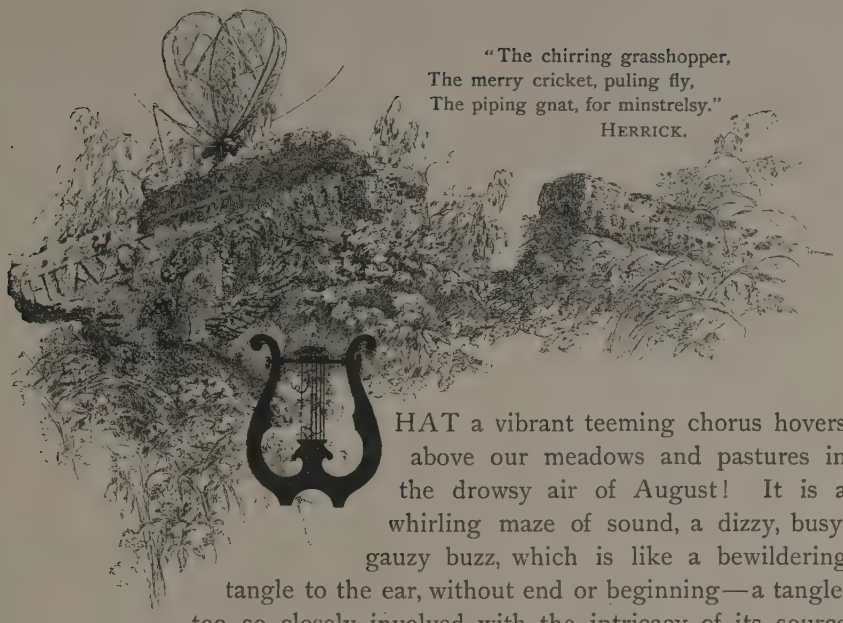
It would be interesting, for example, to have heard the presumable soliloquies suggested by the numerous faces at the neighboring windows, as I pried among the weeds on hands and knees, or, seated in the dirt, enjoyed a half-hour with the exquisite and innumerable faint, shadowy forms and silhouettes of grass and weed and shrub softly gliding on the sunny fence. There is a strange, awe-inspiring beauty in these pure, intangible shadows. The veriest homely weed, seen thus, as it were, in its disembodied spirit, becomes instinct with beauty. Wordsworth, it will be remembered, fell upon his knees before the daisy's shadow.

Next August I shall doubtless once more contemplate with pity the barren, close-cropped, sun-baked possessions of my neighbors far and near, and shall doubtless draw the same "odorous" comparisons to the glory of the cool, verdant oasis beneath my own windows, with its maze of waving grasses, its dewy gossamers, its murmuring insects and glinting wings, and the wild wing-music of its singing shadows.




SINGING WINGS





"The chirring grasshopper,
The merry cricket, puling fly,
The piping gnat, for minstrelsy."
HERRICK.

WHAT a vibrant teeming chorus hovers above our meadows and pastures in the drowsy air of August! It is a whirling maze of sound, a dizzy, busy, gauzy buzz, which is like a bewildering tangle to the ear, without end or beginning—a tangle, too, so closely involved with the intricacy of its source among the weeds and grasses that the listener seldom thinks or cares to seek for a loose end. Yet they abound, and odd ends they often are, indeed, if one may only have the patience and the eye to find them.

These singing fields of ours are a suggestive heritage of the new continent. The Old World knows them not. The observant American tourist who for the first time saunters through the summer meadows of England is immediately struck with their silence. Thus Tennyson's line,

"For now the noonday quiet holds the hill,"

and the parallel passage of another English poet, Dr. Leyden,

"Sweet grasshopper, who lov'st at noon to lie
Serenely in the green-ribbed clover's eye,
To sun thy filmy wings and emerald vest,
Unseen thy form and undisturbed thy rest.
Oft have I listening mused the sultry day,
And wonder'd what thy chirping song might say,
When nought was heard along the blossom'd lea
To join thy music, save the listless bee,"

while truthful from the European stand-point, could never have been written on American soil. Isolated singers there are in these foreign summer fields, 'tis true — crickets, locusts, and grasshoppers — counterparts of American types, and these in abundance, but they do not seem exuberant; there is no such unanimous, multitudinous expression as finds escape in our pastures new. Against the background of that "noonday quiet" each individual minstrel, though unseen, betrays its portrait to the ear, and is readily recognized, as shown forth in the beautiful lines of Keats — a pretty tribute to an isolated soloist:

"The poetry of earth is never dead:
When all the birds are faint with the hot sun,
And hide in cooling trees, a voice will run
From hedge to hedge about the new-mown mead;
That is the grasshopper's; he takes the lead
In summer luxury; he has never done
With his delights, for when tired out with fun,
He rests at ease beneath some pleasant weed."

There was evidently no difficulty in following the course of that song, but it would have taxed the patience of the poet to have performed a similar poetic service for the American insect, for it takes a sharp ear to separate the complete score of the individual grasshopper or cricket in our meadow orchestra. The ear must be focussed, as it were, and, moreover, equipped with the anticipation of previous familiarity with the thread of its song ere it can be disentangled from the maze. And what an eternal saturated inundation of sound it all is! The air seems to quiver and pulsate in sympathetic rhythm above the grass-tips; every dancing blade would appear to have its animate voice. It is to midsummer what the bird choral is to spring. The feathered minstrels are now comparatively silent, eclipsed, and have given place to the "joyous meadow tribes." From horizon to horizon the sunny pastures and the ripening fields resound with singing wings — the great pastoral symphony of harvest-time.

Thoreau loved to explore "the sources of the myriad sounds which crowd the summer noon." They seemed to him "the very grain and stuff of which eternity is made."

"The wide air is full of joyous wings,"

sings Bryant—a sentiment which now receives its fullest confirmation, albeit, I imagine, one not considered by the poet. The buoyancy, the joyous flight, was in his thought; the music of those wings, while doubtless quickening his own, yet prompted no expression of tribute. For it is a remarkable fact that with all his close intimacy with Nature this observant poet should have left no recognition of our ubiquitous meadow minstrel. Thus when we read in his "Summer Ramble,"

"The quiet August noon has come;
A slumberous silence fills the sky,
The fields are still;"

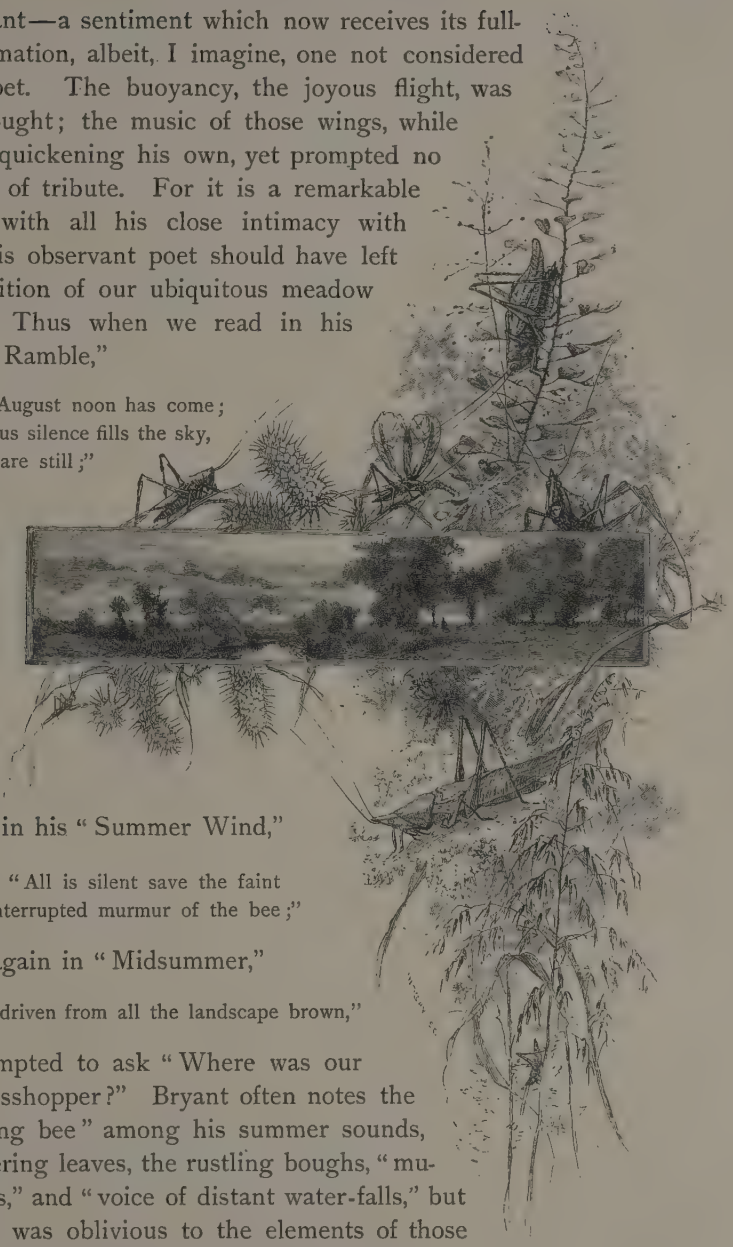
and again in his "Summer Wind,"

"All is silent save the faint
And interrupted murmur of the bee;"

and here again in "Midsummer,"

"For life is driven from all the landscape brown,"

we are tempted to ask "Where was our festive grasshopper?" Bryant often notes the "murmuring bee" among his summer sounds, the whispering leaves, the rustling boughs, "music of birds," and "voice of distant water-falls," but apparently was oblivious to the elements of those meadow sounds to which he sometimes alludes.



MEADOW MINSTRELS.

Who shall draw a parallel or comparison to the bird voice of the spring, the choral of the vernal morning? Not I. There is a deep emotional and spiritual sentiment awakened by the jubilee of the returning birds which any words at my command are but paltry to express. Each voice of Nature has its unison, its dear companion chord of sympathy or association in every heart; and yet there is to me in these

"Sounds that rise from the murmuring grass,"

in the sunny wing-song of an insect — that strange symbolic creature, equipped for song only in its final metamorphosis, the perfect being only singing — a significance which not even the sweeter vocal charms of the birds possess. Why ransack the old mythologies for the emblem of poesy? why invent a winged horse? why invoke a Pegasus, while yet the veritable symbol of the singing wing lingers, and has always lingered, even at our door or upon our hearth?

I am never weary of renewing my acquaintance with these quaint little meadow musicians as I stroll afield, these

"High-elbowed grigs that leap in summer grass."

The weedy pasture or neglected fallow is their paradise. Amid all their intense *vibrato* I can generally catch a certain familiar strain, and follow it to the end — *tsip*, *tsip*, *tsip*, *tsip*, *tsee-e-e-e-e.* It emanates apparently a rod or so in advance of me. I approach stealthily, starting up the inevitable swarms of flying locusts that pitch with headlong momentum into the quivering herbage on right and left. They certainly would break their precious necks were they not so re-enforced by that stiff, protecting collar — an armor in which those close-fitting, ram-shaped heads revolve as in a socket-joint. The song now rises again amid the din of thousands which might be its echo, still apparently some distance ahead of me, thus, with a certain alluring quality, decoying me on and on, until at last the one particular strain on which my attention has been focussed is positively approached, and seems now to rise directly from my feet. Seating myself cautiously, I await developments.

The commotion among the lively and sharp-eyed spasmodic jumpers aroused by my approach at length subsides, and the grassy jungle through which my eye now penetrates assumes its wonted equilibrium. How in-

tricate and infinite these shadowy recesses! With what exquisite grace of motion the slender grass-culms bend and sway with the tossing of their capillary plumes in the billowy breeze! How the sifting sunbeams which filter through the tangles glint and glide and play among the waving stems, with here a flash from a gauzy wing, and there a glittering spangle from some lingering dew-drop, dallying in silken gossamer, or cradled within the hollow of a conscious leaf!

For a moment the identity known as "me" is annihilated. An old, strange, indefinable longing, a half-forgotten association, seems to possess me. I become a vague memory; I am a cricket again, an ant, a beetle, and fancy that the human estate knows no parallel to this luminous singing realm beneath the grasses. Could all this witchery but be spirited on the canvas, how might the great uninitiated revel in this phase of beauty else forever unknown to them. But, ah!

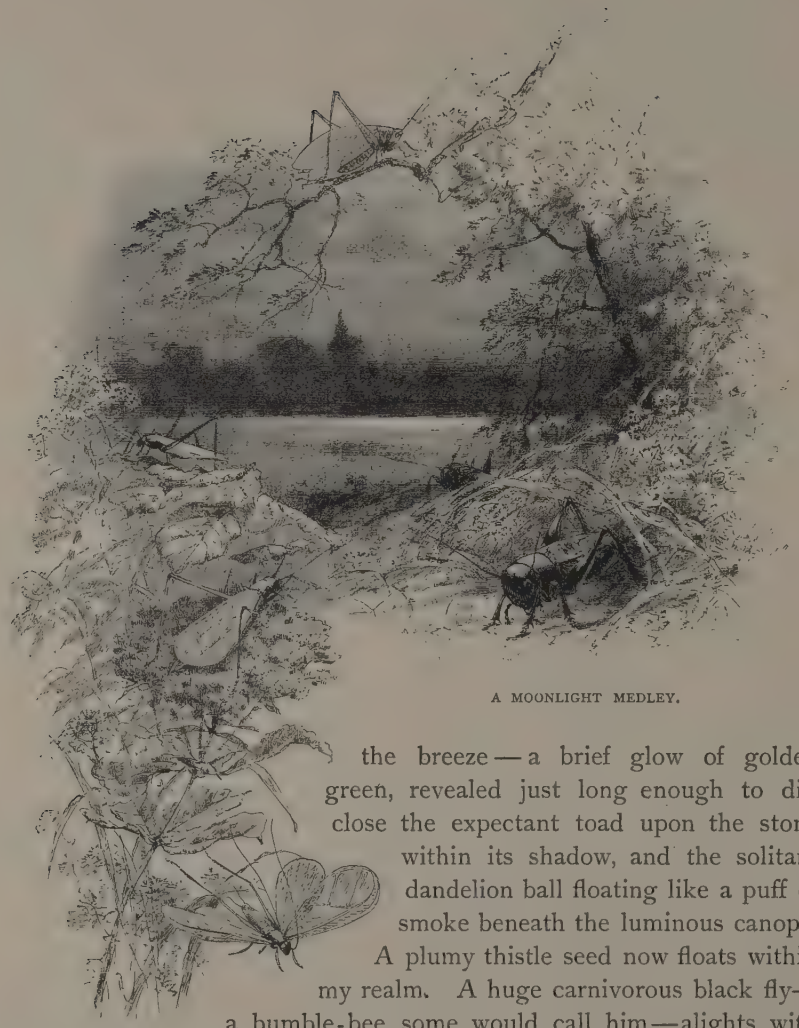
> "Who can paint
> Like Nature? Can imagination boast
> Amid its gay creation hues like hers?"

This shimmering, sheeny light upon the velvet mullein leaf, the subtle

> "Witchery of the soft blue sky,"

everywhere felt among the shadows, reflected from blade of grass and glossy stem, or manifested in a faint bloom upon the downy leaves. Here falls a pearly petal, dislodged by some rifling bee from the pink wild rose up aloft, sifting down, and loitering on its way. And what an endless gambol of light and shadow, what a play of contrasts, as the kaleidoscopic leaves and blossoms in endless caprice alternately catch the sunbeam or seek the shadow! This red clover, but a moment since aglow in sunny color, now hides in sober purple, though yet more plainly seen, upon its ground of sunlit daisies. The grass stalks gleam in glistening strands, or etch themselves in intricate pencillings.

Now comes a fresher billowing breeze above that works new transformations, opening up vistas hitherto unknown, and showing forth a thousandfold the limitless resources of this lowly meadow world. Just beyond, a luxuriant cluster of swamp-cabbage leaves, heretofore lost in sombre mystery, is now revealed in a burst of mellow light. It is only for an instant, while the shadow of its overhanging bush is playing elsewhere in



A MOONLIGHT MEDLEY.

the breeze — a brief glow of golden green, revealed just long enough to disclose the expectant toad upon the stone within its shadow, and the solitary dandelion ball floating like a puff of smoke beneath the luminous canopy. A plumy thistle seed now floats within my realm. A huge carnivorous black fly— a bumble-bee some would call him — alights with buzzy wing upon a clover head near by. But we will not look upon him now. A history of discord is his. His hum is pitched in the minor key, and to the poor human sentiment seems ever out of unison with the harmony of Nature. What have we here? What fairy creature is this, hovering in the halo of its tiny wings like an atom of down floating above the yellow toad-flax flowers? And now it settles on the golden horn of plenty, and begins to probe with its slender bill into the very heart of the

sweets. A gnat—a snow-white gnat, in very truth—with feathery antennæ and all, transfigured and spiritualized, its old appetites renounced, and now sipping the nectar of the flowers, and singing the while with its phantom wings. One may well marvel at such an exquisite creation as this, and feelingly recall the appreciative sentiment of Pliny of old: "In these little bodies how can one comprehend the reason and the power and the inexplicable perfection that Nature hath therein shewed? How hath she bestowed the five senses in a gnat? Where hath she made the seat of her eyes? where hath she set and disposed the taste? where hath she placed and inserted the instrument of smelling? and, above all, where hath she disposed that dreadful and terrible noise that it maketh?" Well may we wonder, too, as we look upon this filmy singing halo, at the human ingenuity which could devise an instrument so delicate as to detect the exact key of this sound, as well as the precise number of wing-beats by which it is produced. Such a miracle has been accomplished by the instrument known as the siren.

A branch of bramble bends in the breeze and sways against my face, and as I look up beneath the foliage my eye is arrested by a small but sharply defined shadow plainly transmitted through the sunlit leaf close by—a shadow rendered all the more suggestive by the projecting tips of the two slender antennæ exploring so gingerly out beyond. "*Zip! zip! zip! zip! ze-e-e-e-e!*" The gauzy minstrel has endured the limit of his silence, and now again takes up his strain, and is almost immediately answered from numerous mysterious sources on every side. But he has evidently caught a glimpse of my unguarded movement, for the "high-elbowed grig" kicks off suddenly from his perch and pitches hap-hazard into space, alighting upon a swaying stem of timothy-grass, and at length straddling with an air of comical solemnity upon a spray of capsella, where he seems to gain confidence, and permits a full view of himself. This is the common diurnal meadow grasshopper (*Orchelimum vulgare*), represented aloft in our vignette in his favorite attitude, seemingly looking down upon his fellows of the timbrel. He is a pellucid green creature, with the outline of his body readily seen through the filmy wings. He is about an inch in length, and the long legs suggest the fragile consistency of glass, and one involuntarily wonders how these slender members could have survived intact such reckless gymnastics as they are continually called upon to sustain as well as instigate. Turning upon his perch, he brings to view his "glassichord," or shrilling organ, upon his back—

a glass-like spot upon his wings just behind the thorax, or what might appear to the facetiously inclined as an exceedingly uncomfortable-looking collar. Even as we take our first glimpse of this diminutive, filmy taboret, a strange tremor seems to have taken possession of the insect, "he seems to shudder," as one naturalist observes, the edges of the wings seem blurred and indistinct in the rapid vibratory movement, and then follow a few quick, convulsive efforts, resulting in the stridulous strain already described, and whose multitudinous repetition on every hand so saturates the quivering ether. For this is perhaps the most omnipresent meadow sound of the New England summer noon; certainly the most prominent. And yet, singularly enough, few of our entomologists seem to have discovered the fact, even associating the song with "evening gloom" and "shady places"—conditions under which my minstrel is comparatively silent. On a cloudy day, indeed, our fields emulate the downs of Britain, and are almost still, our present musician among the rest. He is a "lover of the sun," and revels in midsummer tropic heats; indeed, his song is a suggestive parallel to the singing of the kettle above the blazing hearth.

Looking out across the grass-tips, there come glimpses of "the landscape winking thro' the heat"—

> "Yon soft ring of summer haze,"

a dreamy distance,

> "dappled o'er with shadows flung
> From many a brooding cloud; far as the sight
> Can reach those many shadows lie in spots,
> Determined and unmoved, with steady beams
> Of bright and pleasant sunshine interposed"—

a melting mosaic of soft lights and shadows, but not less also a map of song and silence, at least comparative. For look! the long bank of massive oaks at the foot of our sloping pasture is now suddenly darkened beneath a hovering cloud. The daisied white-caps seem to melt among their billows below us as the soft, cool glamour glides upward into our presence. Hark how the singing wings are stilled, how perceptible the lull even in the brief shadow of a cloud! How transparent now the deeper secret of these sympathetic glassy lyres. They invoke the sunbeams, and what they receive in light they bequeath in song. Enough of Pegasus! Let him henceforth be imprisoned secure and close within

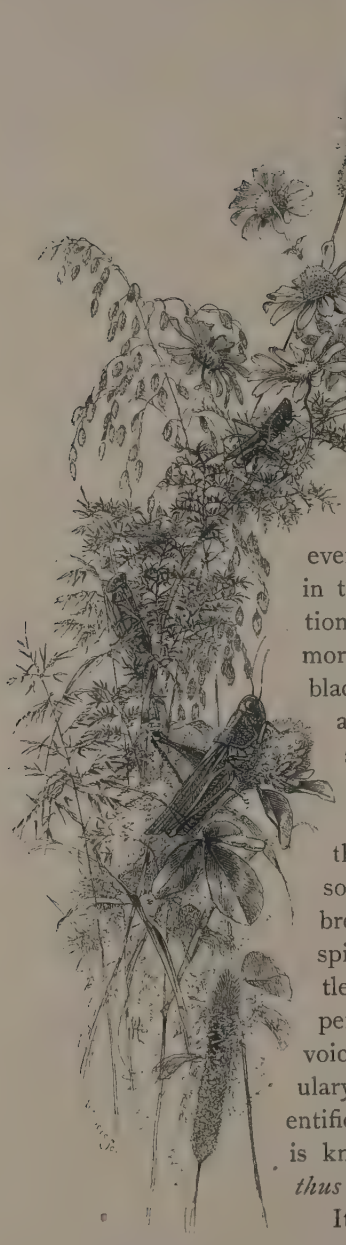
his ancient musty scroll, and crumble in his effigy. His wings are artful quills that soar with heroic grandiloquence among the dead, dark Plutonian ages, but never yet have sung in palpitating sunbeams. The chimera of the pagan bards has served his day; Nature's God supplants a worthier living symbol. "Go to grass," my poet; "you have eaten hay long enough."

But if the harp of the meadow grasshopper thus touches my willing fancy, and

> "Sweeter sound these humming wings
> Than the proud minstrel's echoing strings,"

how much more aptly significant is the instance of another of its companions in music, the daintiest animated timbrel which this meadow orchestra can show? Fortunate are you if permitted to steal within its charmed circle and discover the pretty exhibition suggested in our vignette, an attitude assumed by the little harpist only in the act of minstrelsy, as he holds his tiny twin lyre aloft, and with deft manipulation, so rapid as almost to elude the eye, awakes "the echoes from the trembling strings"—a continuous high-keyed trill, prolonged sometimes for ten or fifteen minutes, or longer, for aught I know, without intermission. But you must observe in breathless and immovable silence, for your very winking is reflected in those receptive glassy mirrors, and at the slightest surprise the music ceases and the musician is instantly transformed. The transparent taborets seem to vanish into air, and now a slender pale green creature, with flat and glistening body, dodges beneath the leaf and is off in a twinkling, his filmy duplex theorbo neatly overlapped upon his back, with the outer half on either side closely folded against his body. This is a prominent voice of our August fields, whose commingled trills, united with the myriad murmuring fiddles of the locusts of every degree, the shrilling of the tiny brown crickets, the humming of bees and droning of beetles, conspire to sustain and prolong the winged roundelay, and against whose continuous undertone the ringing tabors and rasping reeds of the grasshoppers recur in more or less universal accord, either rarely as a distinct feature, or as an occasional full crescendo in the great orchestral movement.

This insect is known as the broad-winged climbing cricket (*Œcanthus sapitennis*), an agile, generally pale green creature, inhabiting the higher musical plane of the meadow among the leaves and flowers of the



THREE FIDDLERS.

loftier weeds and bushes. Delicate and fragile as he certainly is, he has still a striking counterpart — in every sense his superior — a yet more refined edition of himself, as it were, so nearly does the one insect suggest the other when contemplated by the eye alone.

Who has not heard that mellow rhythmical "*te-reat! te-reat! te-reat! te-reat!*" the lulling, throbbing voice ever so closely associated with the late summer and autumn evenings, whose pulsating vesper chorus ushers in the sundown, and continues, without cessation, as a lullaby between the evening and the morning twilights? It is not the voice of the black cricket so commonly and undeservedly associated with the sound. Approach its source. It will be found invariably to proceed from some elevated position in bush or tree, and never from the ground. No, there is no savor of the earth about that song. In comparison to the song of its sombre rival, it is as much more ethereal and spirituelle as its animated source is more subtle and diaphanous; for the body of this vesper minstrel is almost as immaterial as its voice. It is the spectral cricket of my vocabulary, though in the more prosaic page of scientific entomology this pallid, filmy little insect is known as the "snowy tree-cricket" (*Œcanthus niveus*).

It was doubtless to the dreamy, spirit-like song of this insect that Hawthorne alluded in

that happy conceit which he so generously committed to the musings of his Canterbury poet: "He listened to that most ethereal of all sounds, the song of crickets coming in full choir upon the wind, and fancied that if moonlight could be heard, it would sound just like that." Elsewhere he alludes to their song as an "audible stillness," his mind not taking note of it as an actual sound, but rather as an unobtrusive sympathetic expression of an interior sentiment — a sad foreboding of the farewell of the year. Thoreau noted the "slumbrous breathing" and the "intenser dream" of crickets. "Purring crickets," Burroughs calls them, and observes that the "sound is in waves, and has a kind of rhythmic beat." How well he knows them! This "rhythmic beat" is peculiarly associated with the song of this cricket, and I have often observed, moreover, what is doubtless also signified in the above allusion, that the quality of perfect rhythm obtains not only to the individual song, but in a still more striking compound sense to their usually associated minstrelsy; for the positively isolated song of this cricket is rare in my experience. The sound may at first appear a unit as to its source, but if closely analyzed will be recognized more often as a sympathetic duo between two congenial spirits, the key-notes being a quarter or a half tone at variance, and so closely identified in their *tempo* that for a long period the two notes are merged into a single tone, recurring in regular soft pulsations. Now and again, with almost unerring certainty and precision, the sound seems to disintegrate, and is more prolonged, the intervals between the beats becoming less and less, until the two tones are barely wedded; and now each note becomes for a brief period distinct and separate, and the rhythmic cadence is much more rapid, until at length, with eagerness enhanced, and with bewitching charm, each draws closer to the other, the truant voices are again united, and the full rhythmic unison once more responds, and even thus, without a pause, until the dawn.

The first touch of this exquisite lyre is heard about the second week in August, and from this time its music increases as the season advances, all through the late summer and early autumn, mingling in discordant contrast with the "chromatic reeds" of the katydids. Indeed, long after the rasping wrangle of these latter has subsided, and the last surviving "little dogmatist" has had it all his own way for days, and at length succumbed, with his legs criss-crossed like a pair of scissors — even yet you may catch an occasional faint trill from the snowy cricket's spectral harp.

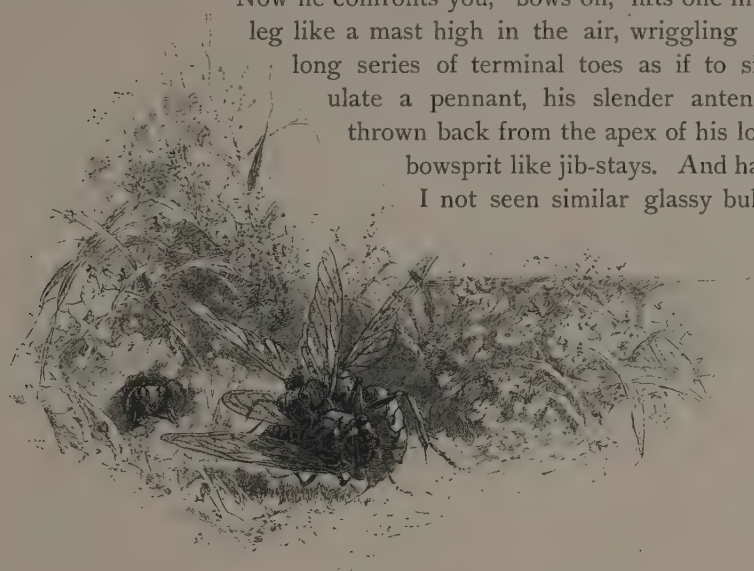
A few summers ago one of these welcome little minstrels took up his abode in a syringa bush just outside my window, and I listened and looked forward with pleasure for his nightly serenade, often with my lantern surprising him in his leafy covert, and witnessing the filmy halo involving the source of his song. As the autumn nights grew more and more chill, his spirit waned, and his song became more fragmentary and perceptibly lower in key, until at length there came a heavy black frost which held its sway for days. Judge of my surprise when, after having bidden my minstrel good-by, and after a week of frozen earth, cutting winds, and flying leaves, I caught another whiff of that piping trill, this time at broad mid-day, beneath a genial sun—a brief respite and a last farewell!

But it was not my intention thus long to take leave of my sunny meadow, for there yet remains another mysterious dweller therein who claims our recognition in positive and rasping accents, "*tsip*, *tsip*, *tsip*, *tsip*," a continuous, rapid, exasperating stridulation, a reiterated noisy parody, simulating the prelude of the meadow grasshopper already described, always foreshadowing some musical feat that shall distance his little rival, but never getting any further than a brag. This is the loudest and most peremptory challenge we shall meet in the entire meadow, in its very grain and fibre suggestive of inordinate egotism. How far our estimate is borne out by the facts, a glance at the careful portrait will suffice to show. His is indeed a case for the phrenologists. Was ever singer before endowed with such a towering bump of conceit! Doubtless its possessor, in the present case, would ascribe to his credit a preponderance of benevolence, or veneration, or other estimable qualities which are said to hold forth in the same phrenological neighborhood; but, however this may be, in either case his proud and lofty distinction is at first certain to be ignominiously mistaken for his nose.

After having once discovered him, and separated his green individuality from the surrounding herbage, and fully satisfied yourself that his long wings are actual insect membranes and not a brace of abbreviated blades of timothy-grass, it will interest you to observe him closely. This insect is known as the "cone-headed grasshopper" (*Conocephalus ensiger*), and may be fittingly called the clown of all this heyday, for the element of the comic is certainly as much borne out in his manners as in his quaint make-up—

> "Now by two-headed Janus,
> Nature hath fram'd strange fellows in her time."

With what an air of solemn mock gravity he straddles around among the herbage, keeping you ever in the field of his view, with the jet-black pupil of the one white eye turned in your direction! It matters not what his position, that pupil is incessantly riveted upon you, travelling to the upper or the lower edge of the eye, as the case may be. And if perchance he now rears up and faces you, as imperfectly indicated in our vignette, what was true of one eye is now true of both, and you are confronted with a cross-eyed grin that brings your long suppressed laugh to a final outburst, which for the time being disconcerts the merry-andrew. Now he confronts you, "bows on," lifts one hind-leg like a mast high in the air, wriggling his long series of terminal toes as if to simulate a pennant, his slender antennæ thrown back from the apex of his long bowsprit like jib-stays. And have I not seen similar glassy bull's-



AN INTERRUPTED SONG.

eyes or light-holes in the prows of ocean craft? Yes; and look! now the machinery begins to work, you can almost hear the propeller as the hulk begins to sway and tremble, and the spinning engine lets off its noisy calliope, as already described. For it is a fact that in no other grasshopper is the sound of the shrilling mechanism so plainly perceptible beneath its song, a suggestion of axles, cogs, and cams, all the worse off for wear. All through this mimetic exhibition our clown has been accomplishing the feat of looking cross-eyed over the back of his head. He would seem to afford a perfect though an exaggerated embodiment

of the simile of Cicero that "the eyes are like sentinels, and occupy the highest place in the body." Nothing escapes the sentry of this watch-tower, it is certain, with its two goggles suggesting prospecting windows in the summit of a minaret. But our harlequin is not yet done with us; we need not be surprised at anything. He will now perform the contortionist act. Lowering his elbowed thigh far below his wing, he will presently work the shank of the leg around beneath his body, thus bringing his jointed toes between his fore-feet. After repeating the exercise with the other leg, he next lifts his fore-foot and pulls down his long, tapering antennæ into his crimson mouth, drawing them through his palpi or teeth, with the two loops gradually enlarging in front of his face. This is his magic act, for how else could those exquisitely fragile members escape unharmed the cutting edges of those hard mandibles?

And so on until the programme is finished and our cone-capped pantaloon takes a sudden notion to skip.

I find an enlarged edition of this same grasshopper inhabiting the grasses of our salt-marshes—a distinct variety, which I have not seen described, noticeable not only from its increased size, but in the contrast of its song, which suggests that of the cicada, outvying it in length, being continuous, and almost equalling it in volume. The jaws of this species are quite formidable, and its tenacious bite leaves a bleeding wound.

Like other grasshoppers, the cone-head is a skilful and sure-footed athlete, and clings unerringly to the first swaying stalk he may elect to grasp. Like the others, too, for some reason he prefers to sing head downward. At the slightest alarm he immediately wheels around to the safer side of the stem on which he hangs, and it is now that my specimen-hunter would seek to steal a hand upon him. But be not deceived, my young enthusiast! for those two projecting eyes on either side of his perch still command a perfect view of your manœuvres, and the grig is off in a jiffy.

I am aware that this individual which I have been disclosing in my noon-day haunt is more properly a nocturnal character, only by especial favor displaying his noisy resources in the daytime. He is an imp of darkness, and begins to file his saw outside your window at the approach of twilight, and may be heard in more or less incessant company with the garrulous katydids all through the night.

Recurring again to "Katy"—for how could one help recurring again

and again to the noisy minstrel, when permitted to listen through the poetic fancy of "our genial autocrat," in his well-known lines inscribed to this insect — that humorous apostrophe which begins,

"Thou testy little dogmatist!
* * * * *

"Thou mindest me of gentle-folks—
Old gentle-folks are they—
Thou say'st an undisputed thing
In such a solemn way.

"Thou art a female katydid;
I know it by the trill
That quivers through thy piercing notes,
So petulant and shrill."

What a happy, deliberate freedom with the artistic license have we here! How gladly welcome, too, when we reflect that a strict regard for scientific truth would have deprived the world of this precious bit of mother-wit. For in fact among all our insect tribes it is not the female but the male that sings, the mate, if answering audibly at all, merely with a slight rustling flirt of the voiceless wings. There are yet many other songsters of lesser note in our New England meadows, but they must, for the present, be lost in the din.

In imputing the gift of song to these musical performers I have taken a liberty with fact, for singers in the true sense these insects are not — they are more properly minstrels — for, accurately speaking, it may be accepted, as Aristotle expressed long ago, "that no living creature hath any voice but such only as are furnished with lungs and windpipes." His context is also interesting: "The noise which we heare come from insects is no voice at all, but a very sound occasioned by the aire which gets within them, and so being enclosed makes a certaine noise and resoundeth againe, and thus it is that some keep a humming or buzzing, as bees; others make a cricking with a certaine long traine, as the grasshoppers; for evident it is and well known that the aire entering into those pipes under their breast and meeting with a certaine pellicle of thin skin, beats upon it within, by which attrition the shrill sound commeth."

When we reflect that the term "grasshopper" is here, doubtless, an

instance of a common error in translation, and should more properly read "cicada," the allusions to the "long traine" and "pellicle of thin skin" have more apt significance, but in such a case the "pipes" and impetus of the "aire" are gratuitous deductions, the modern microscope having disclosed an intricate vibratory muscular mechanism which, acting on the drum-like membrane, produces the sound that is magnified by the contiguous air-chambers within the insect's body. The drum of the cicada is a veritable living microphone, magnifying a comparatively trivial vibration into a loud crescendo.

This confusion of the identity of the cicada, grasshopper, and locust is unfortunate. It is wellnigh universal, and seems almost past overtaking. Popular tradition perpetuates the error, while the earlier Greek scholars appear to have been at variance, and thus through the page of science contributed a stimulus as well as a verification of the common misconception. The origin of the difference seems to have been on the questionable significance of the Greek word *Tettix*, which was the name applied to the insect minstrel of the ancients, and which is rendered into English by most of the commentators in the various lexicons and dictionaries as "*Tettix:* a kind of cicada; a grasshopper"—a rather involved definition, which might appropriately be paraphrased thus: "*Tettix:* a kind of katydid; a squash-bug." Thus the veritable and true cicada of Europe — the "beloved of the ancients," and the parallel of our American harvest-fly — has come down to us "grasshopper" by the commentators, and through tradition since as "locust," whereas the true *locust* of Europe is an insect of a different breed, similar to our so-called "grasshopper," which latter term again is a misnomer of our own, these brown jumpers, the "Quakers" so lavish with "molasses" to their rural lad, being really an example of the true *locust*.

"Shrill cigala, people of the pines,"

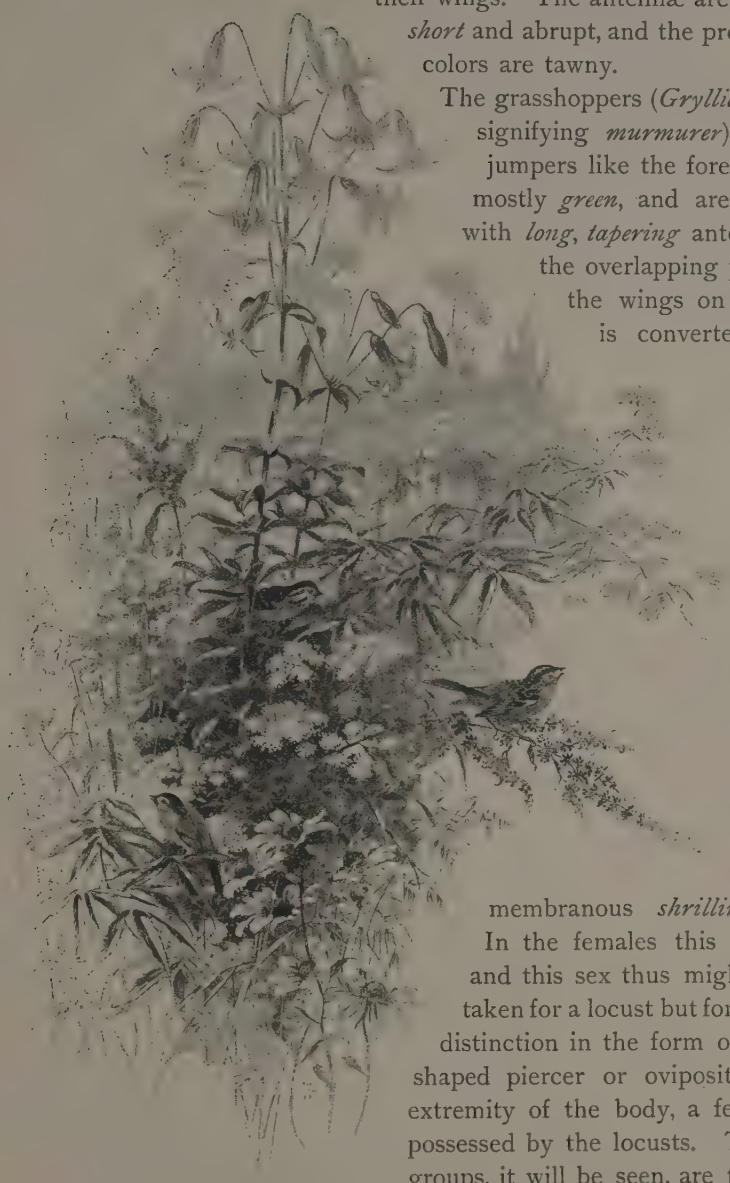
says Lord Byron, in evident allusion to the cicada, and yet the word *cygale* is to-day a common French title for the grasshopper.

In order, then, to disentangle this extremely mixed identity of these three insects, and to help start a most desired reform, the respective characteristics of each group may be briefly summed up as follows:

The term *locust*, then (*Locustadæ*), embraces all those long-elbowed grigs which in their full growth are *destitute* of glassy singing tabors on

their wings. The antennæ are also quite *short* and abrupt, and the predominant colors are tawny.

The grasshoppers (*Gryllidæ*, Greek, signifying *murmurer*), elbowed jumpers like the foregoing, are mostly *green*, and are provided with *long*, *tapering* antennæ, and the overlapping portion of the wings on the back is converted into a membranous *shrilling organ*. In the females this is absent, and this sex thus might be mistaken for a locust but for a marked distinction in the form of a sword-shaped piercer or ovipositor at the extremity of the body, a feature not possessed by the locusts. These two groups, it will be seen, are thus readily distinguished.



MEADOW MIMICS.

The *cicada* is a totally different

insect, and in no way to be confounded with the foregoing: a short, thick-set fraternity belonging to the unrelated family of *bugs* (*Hemiptera*), insects without teeth or mandibles, these members being replaced by a beak for sucking. The antennæ of the cicada, so well known by its song, are minute; the legs are short and stout, almost equal, and not fitted for jumping, while the shrilling organs furnish in fact the only distinction needed for complete identification, being placed within and at the side of the body, two large parchment sacs, ribbed and gathered into numerous plates, furnished with powerful muscles, and situated in large cavities at the base of the abdomen.

It is this latter insect which is so mistakenly called *locust* with us, and whose shrill, prolonged whizzing *vibrato* in the late summer days seems to give actual voice to the sultry heat, and which has also won for the insect the better title of harvest-fly: "the locust's *zing*," says one observant poet, though victimized by the popular misnomer. "The most skilful musician could not surpass his crescendo and diminuendo," writes Wilson Flagg; "the song beginning low, usually high up in the trees, and increasing in loudness until it is almost deafening, and then gradually dying away in silence." But here again this song, so evidently that of the cicada, is attributed to a "species of locust."

Indeed, when one finds so true a seer as Wilson Flagg in error on this subject, one need scarcely marvel at the popular misconception. It is incredible that so close and accurate an observer should have unconsciously abetted an error already so prevalent, in attributing the song of the harvest-fly, or cicada, to a "species of locust." He also uses his "cicadas" and "nocturnal grasshoppers" as synonymous terms, evidently having been misled by the too free translation already mentioned. I suspect that our pleasant and usually accurate author in this one instance took the song on trust, and failed to verify his conjectures as to the origin of this mystifying, nocturnal music, for it was doubtless the lulling witchery of the phantom vesper cricket which thus caught him napping, as it were. "The nightingale of insects," he happily calls the minstrel, and his table of the varying key-notes of its song, as influenced by the changes of temperature, is indicative of his accustomed careful research, and, applied to a single individual insect, is doubtless correct. At 80° the insect is in its element; at 50° the songs are scattering and feeble, with various intermediate grades of quality and energy. I have myself repeatedly listened for the music at 45°, but have never been rewarded.

I have indicated the cicada in an accompanying vignette, represented as in the toils of his arch-enemy the sand-hornet, which is wont, hawk-like, to pounce upon his prey in mid-air, and literally lug him off wing-fashion to his burrow. Here the buried insect is left with a companion egg, which soon takes animated and voracious shape, the "immortal happy insect" of the ancients being expeditiously assimilated into the form of a sand-wasp, suggesting a rather sinister significance to the lines of the antique poet:

"Happy insect, what can be
In happiness compared to thee!"
* * * * *

"Thou dost dance and thou dost sing,
Happier than the happiest king?"

For the cicada in literature has a noted historic record, and, like the *Scarabæus* of Egypt, its proud lineage runs back into antiquity. Few insects figure so conspicuously in the classics. We learn that the cicada was kept by the ancient Greeks and Chinese in a cage for its song. Looked upon almost as a god, it has been immortalized in verse by Homer, Hesiod, Anacreon, Theocritus, and many other ancient bards. Indeed, when we read the antiquated odes, apostrophes, etc., of which the song of the cicada has been the inspiration, we may well wonder whether the musical powers of this insect have not been deteriorating through the ages. Anacreon, for example, in his celebrated tribute to this insect, apostrophizes it as the "Offspring of Phœbus," "Harbinger of better days," and addressing it as "a demigod at least," welcomes its song as "music from the spheres of Heaven."

The cicada perched upon the harp was the accepted emblem of music among the Greeks, by whom the sound of the harp and that of the insect were designated by a synonymous term. This recalls the familiar ancient story of the two rival harpists, Eunomis and Aristo, competing for the prize. The former, though the more skilled musician, having broken a string, would certainly have lost the laurel, but a cicada, discovering his misfortune, alighted upon his harp, and tuning its timbrel, "supplied the place of the broken string with its melodious voice, and so secured an easy victory over the antagonist."

Homer held up the *cicadæ* as models of good orators, "which in the woods, sitting on a tree, send forth a delicate voice." Virgil, on the

other hand, apparently blessed with ears of more sensitive make and modern mould, decries their disagreeable grating tone, and lays to them the charge of "bursting the very bushes with their noise" ("*Et cantu querulæ rumpent arbusta Cicadæ*"). An African cicada, it is said, can be heard distinctly the distance of a mile.

The locusts proper, so identified with the plagues of Holy Writ, and with which our summer fields swarm with numerous representative species, while thus less famed for their musical powers, are yet not without their resources as instrumentalists. It is to these minor musicians, the fiddles of the Campestrian orchestra, that we are in a measure indebted for the continuous chord which underlies the chorus of singing wings. What these musicians lack in individual importance is fully compensated for in their multitudinousness. Thus the flight of an individual locust is a trifling sound in itself, while the noise of the traditional swarm has been likened to the "roar of a wild ocean" or "fierce tempest." In less heroic comparison the consideration applies from the stand-point of their music. Barely perceptible to the ear by itself, this single diminutive "first violin," re-enforced a hundred-thousandfold, asserts itself distinctly, and lends a sustained, important feature to the summer medley.

In the locust, as I have said, the taborets of the grasshopper are wanting, the term "singing wings" being but partially applicable, the wings doing only half duty in the musical performance as the responsive instrument, the viol, to which the insect's leg performs the office of bow. When a locust begins his "recital" he is apt to assume the attitude of the "first fiddle" among my pictured trio, the shank of his leg being drawn close within a groove beneath the thigh, evidently made to receive it. With an air of comical solemnity the leg is now raised and lowered with more or less regular and continued motion, being pressed close against the firm edge of the wing-covers, by which contact the fiddling is accomplished. Thus a certain antique philosopher had it pretty nearly right when he affirmed, "As for locusts, it is generally believed and received that they make that sound with clapping of their feathers and thighs together." This same musical resource is known to other species of insects as well, notably many beetles, one of which, the pretty painted *Clytus*, a beautiful yellow and black banded creature, may rightly claim a minor place among our orchestra as he sips and fiddles so contentedly among the golden-rod blossoms.

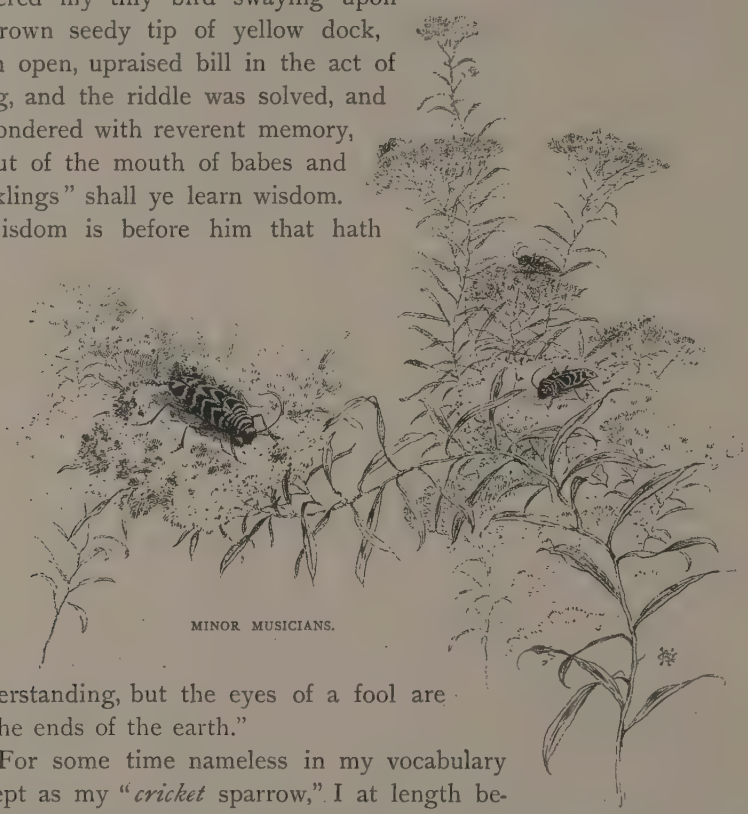
But there are still other voices identified with our summer fields, a

few "odd ends" in this tangle of sound which we have as yet ignored; for in our compliment to the insects we have occasionally been the dupes of various little strategic shams in the way of mimetic bird-songs. Foremost among these meadow mimics is the tiny yellow-winged sparrow; and a queer little finch he is, in his feathery identity doubtless as little known as any bird in New England, and in his voice less still, for though heard the livelong day, the meadow grasshopper would be sure to get the credit. Of all our birds, even with bobolink in mind, this little sparrow is still the meadow's own. Bob can teach him nothing of this ground. He has no points to learn from grasshopper or cricket, for his world and theirs are identical. He is the feathery counterpart of both insects; a very cricket of the shadows, threading his way among those intricate passages down deep against the mould beneath the débris of last leap-year's grasses, a complex labyrinth known else only to the field-mice and their kindred. Here he is perfectly at home; while above, again, the flitting wings of the grasshopper bound the loftier limits of his little world. The plane of his life rarely rises above the meadow-lilies — a lowly plane, but even thus it would seem the more vocal of thanksgiving. Once seen and identified with its song, this diminutive sparrow is not likely to be forgotten. I shall not readily forget the occasion of my first acquaintance with him, nor the little grudge I bear him for the artful strategy with which, in the guise of a wondrously elusive insect, he decoyed me on and on, hither and yon, making me dance attendance on his mischief through a half hour's eager search among the weeds, and the thermometer at ninety degrees!

The song at a little distance almost exactly resembles the final prolonged strain of the diurnal grasshopper already described, save that it is more extended, and when in close proximity a little louder. It has, moreover, a peculiar ventriloquistic quality, which, when heard in the distance, seems to locate its origin at much closer range, this peculiarity again contributing to the difficulty of identity of the bird with its song, even though the former be in continual sight, which, however, my bird was not.

But at last I was enabled unmistakably to locate the vocal source (my new grasshopper, as I then supposed), the song this time plainly emanating from a neighboring elder-bush. On a nearer approach, however, the trill ceased, and simultaneously a little brown bird darted out, skimming over the daisies with rapid fluttering beats of wing, and alighting

upon a fence-rail near by. Even yet I was not undeceived, and was still listening, with cautious approach in the direction of the elder-bush, almost beginning to query whether that diminutive bird had not anticipated me, having surprised my grasshopper in his covert and made a meal of him. Yes, the voice had eluded me once more, but only to break out afresh even in my former footprints. Looking back, I discovered my tiny bird swaying upon a brown seedy tip of yellow dock, with open, upraised bill in the act of song, and the riddle was solved, and I pondered with reverent memory, "Out of the mouth of babes and sucklings" shall ye learn wisdom. "Wisdom is before him that hath understanding, but the eyes of a fool are in the ends of the earth."



MINOR MUSICIANS.

For some time nameless in my vocabulary except as my "*cricket* sparrow," I at length became seized with the ornithological fervor, and desired to lay my doubtful specimen beside the page of Audubon, thus, ignoring the humane sentiment of Emerson, I had recourse to that valuable and necessary, though much abused ally in this branch of study—my gun.

But I seemed to have missed my aim, for the bird flew directly to the ground, alighting in the short dry grass of the open, well-cropped pasture. I approached eagerly, with my eye riveted on the spot, but no

sign of feather or bird appeared. In the matted yellow grass, however, I discovered a suggestive opening into a shadowy hollow beneath. Inserting my hand within, I was surprised to find a continuous cavity, admitting the full reach of my arm. Here, then, was the secret and secure pavilion of this cunning fugitive. But I pursued him with determination, tearing away the meshed canopies of withered and dead grass, and laying bare a perfect system of mysterious tunnels, aisles, and galleries, hitherto undreamt of, running in every direction. I had thus followed these ramifications for a distance of ten feet or more from my starting-point, when my zeal was suddenly rewarded with a glimpse of the retreating tail of my fugitive. His resources were pretty nearly exhausted, however, as I had driven him into a "blind alley." Even here he almost escaped me by adroitly darting through the roof, his sharp visage threading through the compact meshes like a shuttle. But I caught him just in time, though not without the most vigorous protest on his part. He proved to have suffered only a slight wound upon his wing, and was more scared than hurt — more shrewd than either. I have given his portrait as he appeared when announcing his identity to me on the meadow, showing the prominent markings on the feathers; notably, the streaks upon the crown, and the conspicuous touch of yellow at the edge of the wing, from which the bird receives its name.

The Savannah sparrow, a streaked, speckled, terrestrial species, is a bird of much the same habits as the foregoing, and is possessed of a chirping ditty, which might even deceive a cricket itself, to say nothing of the entomologist.

The third member of my mimetic trio is the diminutive field-sparrow (*Spizella pusilla*), which, in addition to a sweet and varied song, has recourse to artful mimicry, and, like Irving's convivial Master Simon, we occasionally find him in "as chirping a humor as a grasshopper filled with dew."

"How my ears sing!" exclaims a little child to me while loitering in a sunny pasture, vibrant with the intense winged chorus. In a similar vein of thought, I doubt if the average toiling farmer ever hears the joyous din — assuming that one cannot be truly said to hear who does not listen. And yet this meadow music hath charms unknown to him. It is a generous beneficence; it sings in his ears as the undercurrent upon which he floats his fancy as he plods afield; to which his hopes, his fears, his joys, his sorrows have been attuned in unison through the

years. How much this pastoral hymn has ministered to his life he little comprehends. We are told that the soldier may sleep soundly through the booming of artillery or the din of musketry, but starts from rest at the shock of sudden silence. Likewise the slumberer in his berth in mid-ocean awakens in apprehension at the stopping of the engine, the beating of this ponderous, palpitating heart being in strange sympathy with his own. How many a callous, stolid toiler of the farm, apparently as innocent of sentiment as the bowlders of his boundary walls, but who through a lifetime has been soothed unaware by the music of his meadow, could he be doomed to silent harvest fields, would awaken to a reality that something of its beauty and sweetness had gone out of his life! Farmer, did I say? It matters not whether farmer, merchant, artist, or poet, there are none too many singing wings in his lot, far too little winged music among its shadows.




A GRASSY ROAD

"OBODY repairs it,
For nobody wears it;
It is a living way,
As the Christians say."

* * * *

"F, with fancy unfurled,
You leave your abode,
You may go round the world
By the old Marlborough road."



"Jog on, jog on, the foot-path way,
And merrily hent the stile-a:
A merry heart goes all the day,
Your sad tires in a mile-a."

I WOULD say a few earnest words in intercession for a patient, venerable neighbor of ours and yours, who has few champions, who suffers in silence, who is fast becoming discouraged at the treatment of thankless posterity, and who thus, year by year, is yielding up his hold among us. Country people everywhere among the hills, let me introduce to you the "old grassy road," the "mountain turnpike," the old "wood road," the "lane" — thus to bespeak the aid of the local vocabulary in fixing the identity I would bring to your mind — for there is an "old Marlborough road" in every town; if not, then more's the pity.

These ancient highways spread like a net over our New England hills — a net whose meshes are fast being lost among the growth which has sprung up around them. These old roads are all akin — essentially the same everywhere. Possessing in spirit a common origin, the history of one is repeated in all. It is the track of the pioneer who opened up the privileges we now enjoy; it is the scar of a hard-fought battle, the mark of courage, fortitude, and heroic self-sacrifice, the road our forefathers trod, and now in many instances the last eloquent visible link between the unworthy present and noble ancestral memories which should be kept green. I would turn the eyes of the errant into this forgotten path, and if possible keep it worn by reverent footsteps, and guarded against the impending invasion — that "improving" hand of "progress."

For it is manifest on every hand that the acquisition of prosperity among our country towns is fast crowding out our rural lanes and ancient roads, tearing up their venerable landmarks, obliterating their footprints, smoothing away their mounds, and ploughing up their ashes. This seems little less than sacrilege — the deplorable fruit of that rage for

"rural improvement" which is now a terror in the air, following in the train of wealth and prosperity, and a certain era in the history of every growing town. Not but that in its proper place, where it pertains and ministers to individual home comforts, it may be highly proper and desirable; but when it sweeps the country, not unlike a scourge of locusts, and at length drives the would-be "country" pilgrim or native inhabitant to the limits of the township to find a bit of nature "unadorned," is it not time to cry halt?

Even the great metropolis hath suburbs — a verdant rim which may be reached by horse-cars.

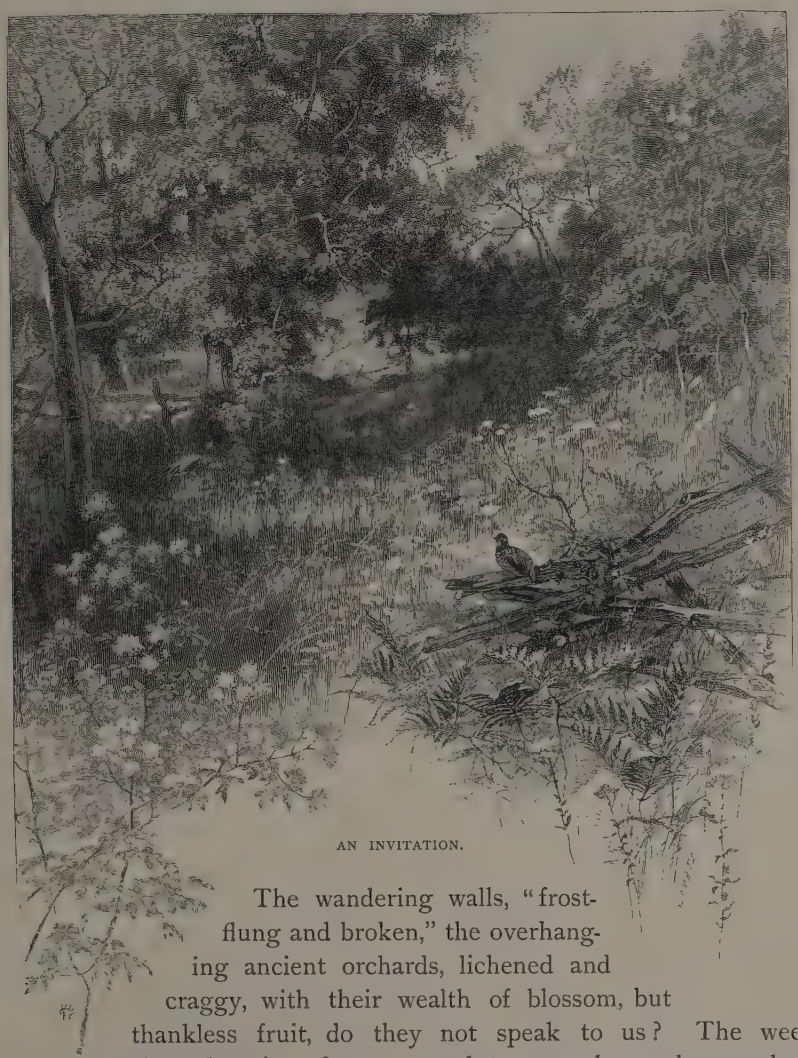
In truth, I wonder at the apathy with which these ancient weed-grown footprints are viewed by the average village mind. Even though blind to natural beauty, is there no other awakening touch to which such might respond amid surroundings where every visible feature is eloquent with that spirit which makes the whole world kin?

In this old road dwells a presence not known to the highway, nor to the wilder or more recent paths of Nature. A quickening pathos lurks in the air, and the saunterer wends his way in a kind of quiet rapture of contemplation not known to other haunts; a mood which is the sympathetic, inseparable concomitant of this, and the gift of no other footpath, by which I almost fancy one might know its touch, though blind.

Look where you may, then, how touching are the testimonies beneath the mere beauty of Nature's adornment! And none of her haunts seem more tenderly cared for than this. There are no such blooming borders, I often think, no such exquisite festoons of draping vines, no such bird-voices as you will find here, where Nature seems to garland the memory of her long-departed, and ever whisper their pathetic elegy.

> "An unremembered Past
> Broods like a presence 'mid the long gray boughs
> Of this old tree, which has outlived so long
> The flitting generations of mankind.
> . . . I ask in vain
> Who planted on the slope this lofty group
> Of pear-trees that with spring-time burst
> Into such breadth of bloom? One bears a scar
> Where the quick lightning scored its trunk, yet still
> It feels the breath of spring, and every May
> Is white with blossoms. Who it was that laid
> Their infant roots in earth, and tenderly

Cherished the delicate sprays? I ask in vain,
Yet bless the unknown hand to which I owe
This annual festival of bees, these songs
Of birds within their leafy screen, these shouts
Of joy from children gathering up the fruit
Shaken in August from the willing boughs."



AN INVITATION.

The wandering walls, "frost-flung and broken," the overhanging ancient orchards, lichened and craggy, with their wealth of blossom, but thankless fruit, do they not speak to us? The weedy clumps picturing the site of some rural treasure-house long reduced

to mould; the silent vacant village pound — now but a harbor for pensive thoughts — brimming over with its crop of weeds, all mementos of its old-time lowing fugitives, and here the touching relic, which more than all the rest invites our lingering: a void in which our eye may dwell, and turn away bedimmed — the ruined cellar with the silent chimney and the cold, empty hearth. Its crumbling walls are filled with trees and banked with weeds, its borders browed with lilacs still fragrant with memories of kind hands "that laid their infant roots in earth." What a reflective silence the hollow of this sleeping well! How pathetic are these faces of the old-time flowers that meet you here on every hand!

I have listened long and often at the brink of these old cellars. I recall the message of the whippoorwill echoing from the shadows, itself unseen; of the soulful hymn of the hermit in the neighboring pines. I recall, too, the flight of hovering spirits against the twilight sky. Some said they were only chimney-swallows, but no eye could ever find their nest.

It has been my fortune recently to have become possessed of an ideal grassy road, or rather, I should say, more properly, of a companionable charge which it carries tenderly and inseparably in its bosom.

> "I saw the new moon late yestreen,
> Wi' th' auld moon in her arm."

This is my farm. It is 'way up there, the old road circling along its edge and winding away somewhere into the clouds. I have never yet found its end, and never shall. Ere this I had known a certain restlessness, but now I am content "to breathe my native air in my own ground." I shall live out my appointed days ere I exhaust this single path; what need, then, of guide-books to Europe — to see the world, the Continent, the Orient. I could sit within this realm and fill my portfolio with them all. Here is my cross and crescent. What is the roar of Niagara compared to this still small voice — the Alpen peaks, the Matterhorn! indeed, my grassy road has carried me much higher than these.

The features of these old roads, as I have said, are alike in all. How naturally are the feet of the saunterer drawn thither; and even when he would take his leave to seek some distant hunting-ground, or familiar wood or brook, how irresistibly is he induced to procrastinate!

This free, unrestrained meandering course of the grassy road pos-



RETURNING SPIRITS.

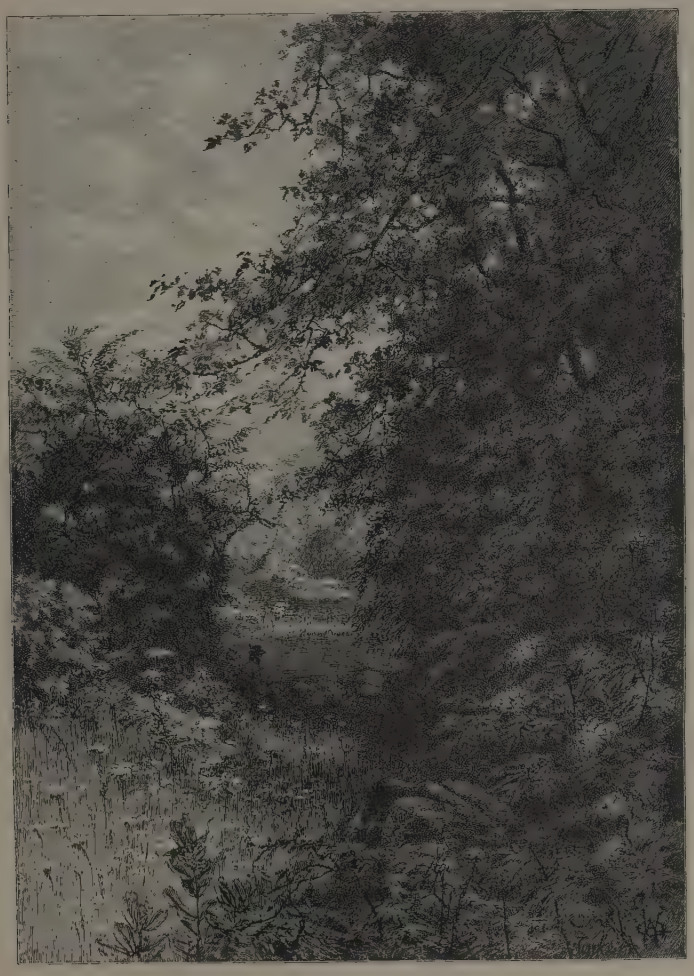
sesses a continuous irresistible charm. The ever-recurring vista with the invariable tantalizing curve beyond; how does that elusive beckoning curve coquet with your fancy? What possibilities does it not suggest!

What will be the prospect? — hill or valley, shimmering pond, rippling river, or billowing field, dusky wood or hazy, tremulous distance of blue hills? There is all the mystery of a to-morrow haunting that elusive curve. Yes, a witching presence hovers there; it is the spirit of the path luring you on and on with ever-enticing promises, never disappointing you, never satisfying you. Now at last in yonder closed covert among the junipers she is driven into her retreat; there is no escape; but lo! she speeds a hundred feet beyond, where in the guise of jutting fence-beam beneath the beckoning aspens she points you still onward, while a well-known voice now strangely modulated to our fancy cries plainly — now if never before — "more yet!" Yes, "more yet!" this is the very watchword of the grassy road. There is a segment of eternity in that beautiful curve beyond.

There are all sorts of lessons as we turn the leaves, loitering by the way. Sitting here under my favorite tree, as is my wont, like Hamlet at the feet of his mistress, eager and expectant, though be it admitted with spirit not precisely akin to his, I await my entertainment. The play begins immediately; a tanager flits by as though to fire the foot-lights, a bell-note from the woods rings the curtain up, and ere we are fairly seated a mysterious presence steals upon the stage and rivets our attention — a more ominous prologue than I could wish: note the sombre garb, the stealthy approach. I recognize him, and his is an unwelcome shadow among these bushes. But the intruder has observed us, and is off again as fast as his black wings can take him. This is the bird whose flocks we observed scampering around the nose of the cow pasturing in the field near by. It is said that they seek the insects aroused into activity by her cropping, but I half suspect it as much the sweetness of that scented breath that attracts them.

Look across this open vista with its sunny mist of bloomy grasses, and their gleaming daisies, and all walled beyond with the luxuriant bank of foliage; of hazels, with their prickly filberts; of crimson-fruited sumacs, their fore-shortened branches silvery-edged with their "stag-horn" velvet; of drooping boughs of wild apple-trees and turquoise-beaded junipers, and all draped with clambering vines of ground-nut, woodbine, and shrubby bitter-sweet. We need go no further than this one verdant gallery to fill our short day with enjoyment. How beautiful that tall bouquet of the graceful meadow-rue, with its fluent tapering stem, its airy crest of creamy tufted tassels and sensitive foliage answer-

ing to the faintest zephyr, the fairest of our weeds. And there by its side, what a revel of the bracted bind-weed (*Convolvulus sepium*)! claiming the sole right of way, involving all, almost obscuring the identity of



A QUIET VISTA.

the generous milk-weed which first gave it a start in the world, reaching out on right and left, snatching this leaf, that neighboring stem, finally winding off in spiry, eager tips from every accomplished goal, and

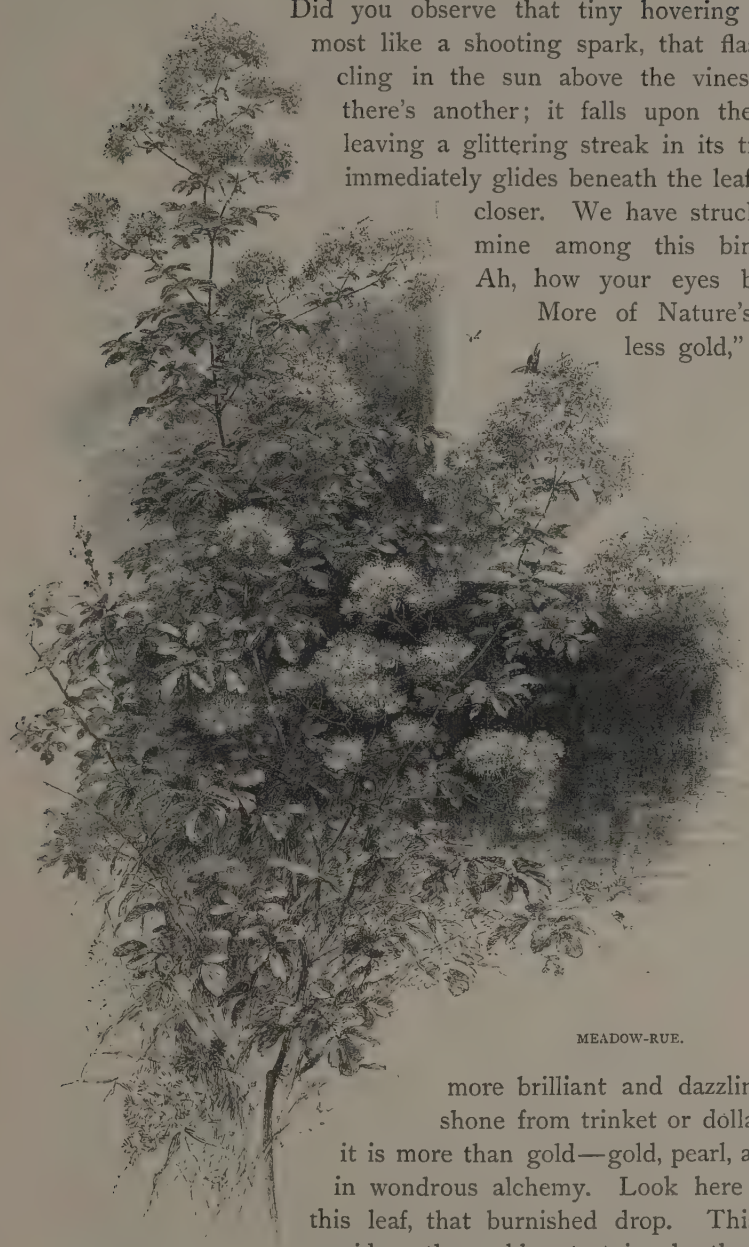
endeavoring to propitiate all with its plenteous show of pink-white blossoms. What is that rustle among the leaves? "*Fidgety, Fidgety, Fidgety, Fidgety,*" a sharp voice rings out from the bushes near by, and a tiny feathered form skims over the grass and alights among our bind-weed, pausing just long enough to say, "I have a yellow breast and a black cheek, and am in a great hurry," and is lost amid the tangle, whence again he sends up his restless call. His voice has fairly ceased when a pursuing shadow flits over the leaves, and there reappears close at hand the same wily presence which we observed a short time since—a bird of ill omen, her black plumage glistening in the sun as she prowls around among the thicket, within which she too now disappears, and where I also would pursue her were it not for the barrier of brambles! How closely does she follow in the wake of that piloting voice, and how certain as doom will she trace it to the source of its inspiration! Who ever heard of a cow-blackbird that did not manage somehow to find its feathered nest? For this is none other than that scourge and parasite of our smaller birds, the American counterpart of the European cuckoo, and fully its equal, it would seem, in the successful pursuit of its hideous calling.

In some of my youthful nest hunts, I remember that it seemed as though hardly a single nest in certain localities had escaped the curse of this bird's visit, evinced either by the presence of the brown spotted egg, or the fat, overgrown fledgling, the "Black Douglas" of the bird home, crushing the emaciated little starvelings, the rightful brood, against the side of the nest, or crowding them over its edge. I have several times come to the rescue of such a household. My long string of cow-birds' eggs was the proudest trophy among my ornithological specimens.

The sparrows and the warblers are specially the sufferers. This little warbler, which has just taken refuge among the bind-weeds, and which is now about to be added to the list of victims, is a favorite with the cow-bird. It is the Maryland yellow-throat; he is marked, and seems to afford in that black cheek a target on which the eager eye of its pursuer is focussed as she threads the underwood.

It is pleasant to sit and watch the play of sunshine and shadow among this bright mosaic; the image of leaf on leaf, the luminous hollow of the translucent blossom-tube where the buzzing fly creeps and seems loath to leave as it sips the nectar far within.

Did you observe that tiny hovering gem, almost like a shooting spark, that flashed circling in the sun above the vines? See! there's another; it falls upon the foliage, leaving a glittering streak in its track, and immediately glides beneath the leaf. Come closer. We have struck a gold-mine among this bind-weed. Ah, how your eyes brighten! More of Nature's "harmless gold," for gold



MEADOW-RUE.

more brilliant and dazzling never shone from trinket or dollar. Yes, it is more than gold—gold, pearl, and coral in wondrous alchemy. Look here beneath this leaf, that burnished drop. This is the cassida—the golden-tortoise beetle (*Cassida*

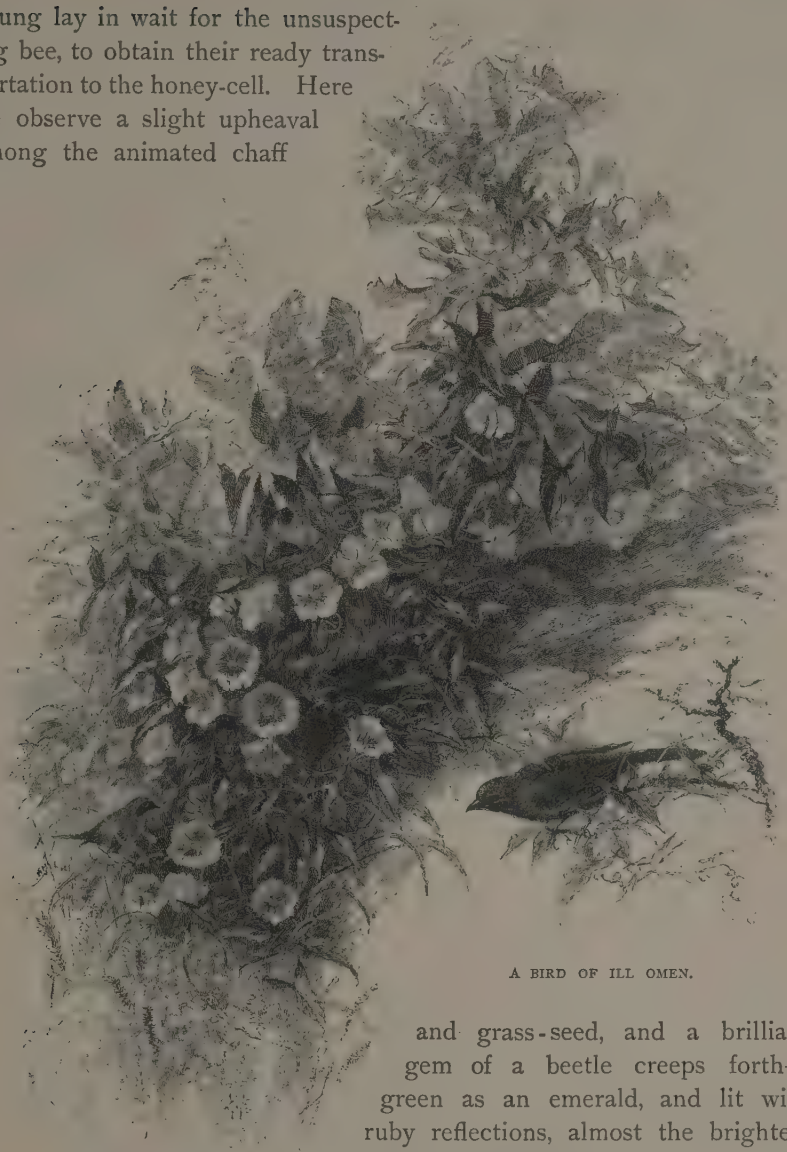
Aurichalcea)—one of the most richly endowed atoms, I venture to say, which the insect world can show. How the eager eyes of the visionary alchemist of old would have responded to this dance of the glittering midge! And yet I have never seen three people other than special students who have known of this suggestive presence among the bind-weed. Yes, this sort of genuine winged gold is 'way below par. It is not quoted on the market, and hence the world knows it not. A nugget in the clod, and how quickly had they discovered it!

Catch the sprightly atom quick, for he is as elusive as fortune; hold him by his tiny feet, and tell me truly was ever such a burnish seen on gold of man's? You may see your face in it. How small we look! but the heavens are there too, if we focus our eye right for them. Yes, even now a strange azure film seems to cloud the gold, and in a moment more it gleams with the iridescence of marvellous nacre, and now in deeper glow suggests an opal, and anon has become a bead of dull red coral, and so remains until the air of freedom is once more permitted beneath the pellicle.

There is an obvious reason to me why this little insect should have chosen the bind-weed out of all creation as its haunt; but perhaps this was a private confidence. In any event, its history is well worth studying; for whether in its winged or more primitive estate, this life among the leaves is full of interest, I assure you.

Often in a sultry summer noon, when time has seemed to drag and simmer by the way, I have sought this spot upon the grassy road, equipped with my butterfly-net and pocket-glass — rare companions these! One or two trips across this open sunny spot with such a light sweep-net skimming the grass-tips and herbage will bring in under your shady tree a harvest sufficient to beguile the entire afternoon, affording an interesting lesson of the strange life that peoples these grassy shadows. Open the netted folds carefully. Here are queer triangular green tree-hoppers, looking like animated dock-seeds, gauzy lace-winged flies with eyes like sapphires and iridescent glassy wings, a very fairy of an insect, a delight to the eye if not to the nostril. This is the diaphanous creature which is responsible for those fringe-like colonies of eggs poised upon the tips of short, fragile cobwebs, which you occasionally see among the weeds. Here a slender green spanworm measures off the meshes; and now emerges a floundering fat beetle of deep indigo blue, artful hanger-on of the buttercups yonder, and whose sprightly

young lay in wait for the unsuspecting bee, to obtain their ready transportation to the honey-cell. Here we observe a slight upheaval among the animated chaff



A BIRD OF ILL OMEN.

and grass-seed, and a brilliant gem of a beetle creeps forth—green as an emerald, and lit with ruby reflections, almost the brightest gaud among our coleoptera, and whose presence here is proof conclusive that yonder plant of dog-bane chanced within the sweep of your net. It will pay you well to search that quarter. Here are spiders of every shape and hue and size, leaf-cutting bees,

flies in glittering tinsel, tyrant wheel-bugs, rampant with heads erect ready for instant combat with their poisoned beak upraised! Touch them not! a hornet rather. The sedimentary mass at the bottom of the net is now seen to be animated with insect life, the dust of pollen and anthers of grass is peopled with agile atoms, tiny creeping bugs and beetles, lady-birds in variety, tiny orange-colored larvæ — parasites released from the bodies of the very grasshoppers in your net. Quick turn your glass upon this frail, plumy winged moth which now creeps from the folds, and this spry midge which, with agile tail, tucks its buzzing wings beneath their diminutive covers on its back after each short



A BREEZY UPLAND.

flight among the meshes. Here are long-legged crane-flies, singing gnats, and in addition to all this varied menagerie, you have doubtless captured representatives of almost the entire orchestra of the meadow, tree-crickets, locust-fiddlers, and a number of other minstrels, described elsewhere in my volume. A sweep-net is a rare companion for a walk.

What endless pictures come to us from among those well-remembered curves! Of sidelong-shadowed aisles overhung with drooping branches, canopied with luminous fox-grape, hemmed in on either side with sumachs and blooming elders; of hazel thickets and green alders screened beneath clambering clematis and false buckwheat, twined and



MOUNTAIN-LAUREL.

intermeshed across the pathway in playful taunt, with "no thoroughfare" laughing in every strand and tendril; of morning gossamers and evening skies; of pink-domed piles of cloud rising to the zenith beyond the "sundown-tinted hill," with shadowed glen and purling brook beneath. There are massive banks of chestnut foliage fraying out in yellow tassels, and wild apples in crimson drift rows circling the sloping stone piles. There is a silent, ruined mill I well remember, and a long stretch across a breezy upland

where the road has taken its wild freedom among the terraced pastures, bristling with mulleins and fragrant with memories of scented blue-curls (*Trichostema*) and noisy rattle-boxes (*Crotalaria*), and dotted with scrubby tufts of thorny dwarf wild apple — those welcome pavilions to the nesting birds.

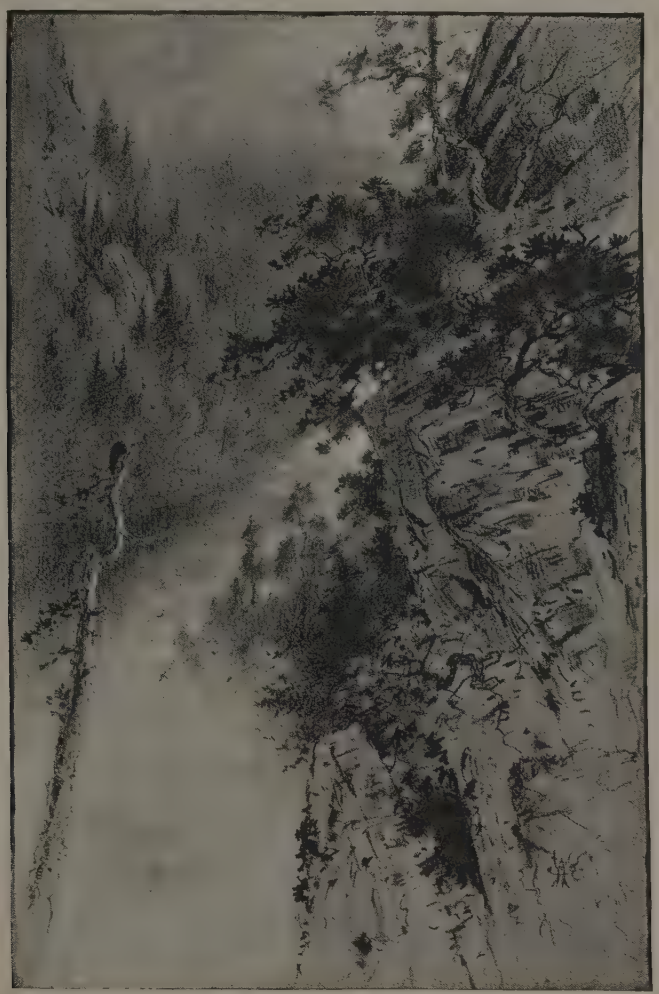
Yonder, at the sky-line of the hill, a dense bank of trees invites my footsteps, and I discover that the truant road and myself are now of one mind again as it approaches my side, and speeds ahead until lost beneath the shadowy recess of the woods.

Here we enter the sanctum of the laurels — a labyrinth of tortuous branches, with glistening leaves and literal banks of pink bouquets of bloom as far as the eye can penetrate, a charmed spot where we are tempted as always to linger.

Here in the twilight you may hear the hum of the sphinx moth hovering humming-bird-like above these honeyed cups, and note the answering salute of the blossoms with their tiny puffs of smoke. Here the small nocturnal feathered moths are showered with a dust softer than their own, as they creep with eager, trembling wings among the tempting chalices, dislodging the expectant anthers from their twelve snug pockets, and filling the adjacent air with mimic pyrotechnics of sulphurous pollen dust. Look at these knobby, distorted roots, the stubborn harvest of the craftsman of rustic goods, the maker of flower-baskets, stands, and "ornamental" gnarled seats; how fantastic are some of these globular shapes as they crop out here and there, even among the rocks at the edge of this precipice upon whose rim we have suddenly approached! Note this fresh, oxidized fissure in the rock. We have all seen the marvel of the soft toadstool — like a tiny, red-faced Atlas, sustaining and still lifting its huge stone above its head. Here in this fracture in the rock we may note an analogous instance of persuasive power in the misshapen root, Time's patient servant — a factor in the disintegration of this rocky precipice, wedging and insinuating itself within the crevice, opening the way for the frost, and at last, in one supreme effort, wrenching asunder the huge piece of granite which has thundered down the ledge and ploughed its way through the trees below.

This precipice is a sort of jumping-off place of our grassy road, it would seem, terminating at the brow of a sheer cliff four hundred feet in height, with the babbling river, flecked with floating foam and cleaved with wedge-shaped ripples, far down beneath us.

There below an eagle screams and spreads his sails upon his vantage-tree, and launches out, soaring above the giddy height until out of sight among the distant hills. The bell-note of the blue jay comes up



A CRAG.

from some mysterious haunt, and now the celestial voice of the hermit thrush. And what is this? There is a flutter of wings back among

the laurels, and instantly a small bird darts past us and, seemingly intent on suicide, plunges headlong over the precipice. Down, down, down it falls; but look! What a thrilling spectacle! In its own good time it finds both wings and voice, descending, as it were, upon invisible spiral stairs of air, and sending up its rapturous voice tuned to the beating of its wings. And now it drops into the out-stretched arms of the hemlocks far below, and its mouth is stopped — I can almost fancy how — while, if we listen carefully, we may catch a faint plashing of a bubbling mountain brook, for this winged voice is one of its choice spirits.

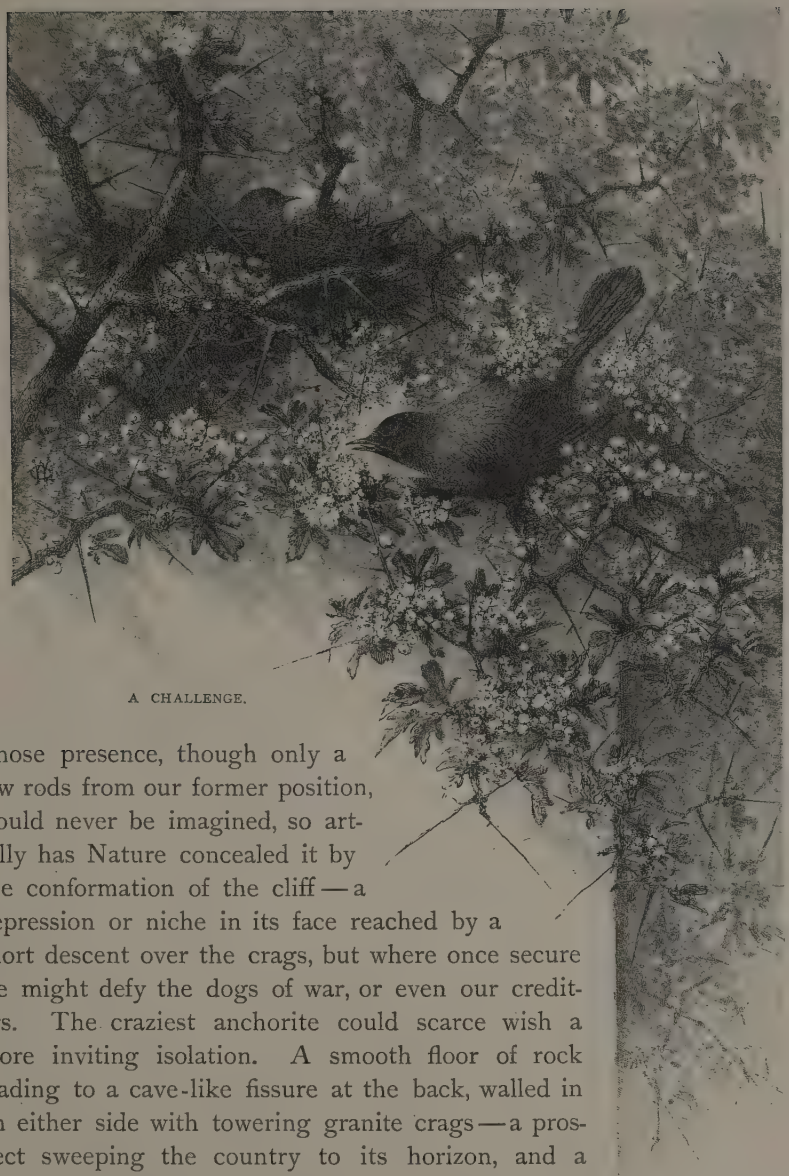
What a lesson of trusting faith and exalted devotion! Hark! how truly has the poet caught the tenor of that ringing message which now comes up from the shadowy hemlocks below, "Teacher, *teacher*, TEACHER, TEACHER, *TEACHER!*"

Thus, on one memorable evening long ago, did I sit in the deep twilight musing on this cliff, and was twice permitted to witness this inspiring episode, which, with its irresistible spiritual correspondencies, has left a cherished impress which years, nor cares, nor misfortunes can ever estrange. I am thy humble pupil, bird of trust and hope and praise; may I prove worthy of thy confidence!

The song of the oven-bird, or golden-crowned thrush — for such was the mundane title of my bird — is, as Burroughs further says, "one of the rarest bits of bird-melody to be heard." And although on this occasion the singer was but a nameless spirit to me, I have since learned to know him well, and I think on one or two occasions I have identified that same rhapsody from a hovering speck aloft in the realm of the skylark.

But the old road does not stop here. It is only a resting-place by the way, where it stops to take a look, and covet a little, perhaps, or get a whiff of valley air. From among these laurels it takes an abrupt turn and leads out into the mountain wilds, where for a time it seems to be getting forgetful in its old age, losing its identity among the numerous distracting old-wood paths by which it is continually waylaid. But it manages to get its wits together again upon the receding brow of the mountain beyond, where it winds off and is lost to sight among the sloping woods and pastures, and would indeed lead us into nightfall were we to follow.

Before returning homeward, it is worth our while to penetrate the jungle of laurels for another outlook a little farther down the ledge. It is a close squeeze while it lasts, but here we shall discover a rare nook



A CHALLENGE.

whose presence, though only a few rods from our former position, would never be imagined, so artfully has Nature concealed it by the conformation of the cliff — a depression or niche in its face reached by a short descent over the crags, but where once secure we might defy the dogs of war, or even our creditors. The craziest anchorite could scarce wish a more inviting isolation. A smooth floor of rock leading to a cave-like fissure at the back, walled in on either side with towering granite crags — a prospect sweeping the country to its horizon, and a dizzy brink which leans out as though about to fall into the abyss. It would appear a simple matter to toss a pebble into the rushing torrent below.

Close at the verge you may observe a suggestive nest-like hollow in which your fancy may play forever — a smooth basin worn in the solid granite, with a pair of smaller hollows by its side. How quickly the figure of the old squaw is spirited thither, and assumes its wonted place kneeling at the old samp mortar! How the mountain wilds again echo with the red man's yell! for we stand upon the empty throne of the Indian, while reverie pictures a theme more vivid than present reality—

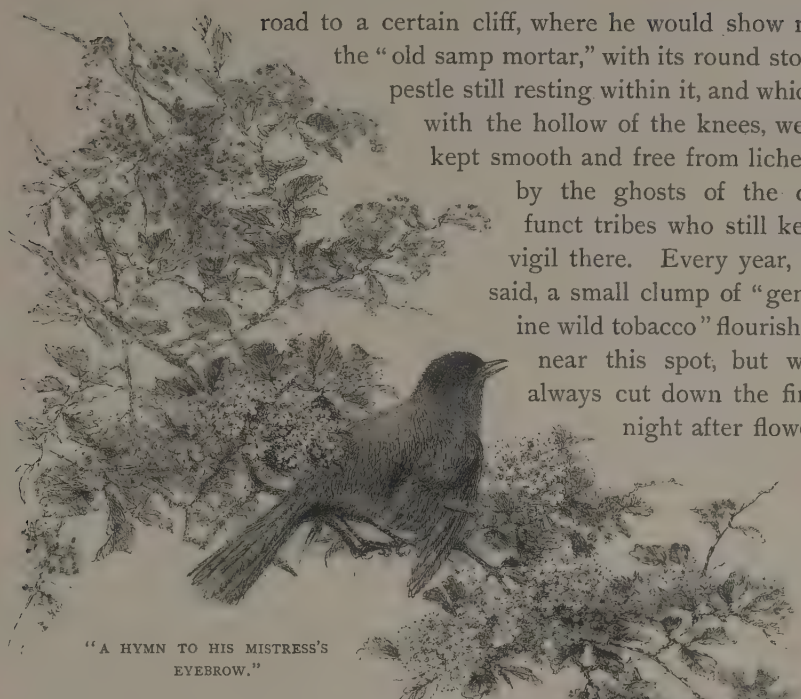
> "Hark! that quick fierce cry
> That rends the utter silence! 'tis the whoop
> Of battle, and a throng of savage men
> With naked arms and faces stained like blood
> Fill the green wilderness; the long bare arms
> Are heaved aloft, bows twang, and arrows stream;
> Each makes a tree his shield, and every tree
> Sends forth its arrow."

In the freshly planted field stretching out like a map upon the plain below us, you may follow the brown furrows and pick up your handfuls of arrow-heads and tomahawks and spears — the smallest fragments of stone seem to possess mysterious nicks and shapes — arrow-heads of feldspar and hornblende, lances of quartz and flint, some of minerals not else known in these parts, or within hundreds of miles, *all* trackless forests when these found their bed; sped thither by no eager wings of arrow — rather the token of friendly barter and pipes of peace, even as in the parallel instance, narrated by Lubbock, of the discovery in Switzerland of similar trophies in jade — an Oriental mineral not known to exist naturally on the continent of Europe.

The specialist in this branch of archæology will read you the craftsman's autograph in almost any one of these strangely-fashioned relics —the hieroglyphs of outline, material, and modelling referring it directly to its tribe.

What a sermon in this stone! What a heart-stirring poem we hold in our hand in one of these mute, sculptured flints! Interesting as trophies to the geologist and antiquarian, how much more profoundly do they appeal to the *man* as the emblems of a strange, extinct race — a race of brethren formed in the image of their Maker!

Strolling through a wild upland wood in New Hampshire, I once met a mountaineer who urged me to accompany him up the mountain



"A HYMN TO HIS MISTRESS'S EYEBROW."

road to a certain cliff, where he would show me the "old samp mortar," with its round stone pestle still resting within it, and which, with the hollow of the knees, were kept smooth and free from lichens by the ghosts of the defunct tribes who still kept vigil there. Every year, he said, a small clump of "genuine wild tobacco" flourished near this spot, but was always cut down the first night after flowering. He had often found a stone hatchet near the place at such a time —all of which only goes to show, my credulous woodsman, that some keen old hermit of a simpler dwells thereabouts somewhere, and she is evidently fond of her pipe.

This "genuine wild tobacco" is but one of the blossoming host which serve to link our present walk with that of the past. This is a rare road for the botanist. In addition to the numerous familiar as well as strange faces which he is certain to find here, there is a delightful page of sentimental botany to which this old road affords the only access. It has a flora peculiarly its own — the loyal gardens of colonial days, with their old-fashioned flowers, which still perpetuate their Puritan memories.

How many of our common "naturalized" plants can trace their lin-

eage to this old road!—the "Bouncing-Bet," the eglantine, the barberry, live-forever, Jerusalem artichoke, toad-flax, May-weed, tansy, feverfew, feather-geranium, all more or less familiar to our pastures and highway borders.

This mossy, tufted bed of cypress spurge which we are now passing, how certainly does it prophesy the proximity of one of those crumbling cellars — the ever-recurring, and withal the most touching, attribute of these by-gone foot-paths! Yes, there it is. Well may you ask, "Where?" Yonder dense screen of lilacs, apple-trees, and wild grape, which obscure its ruined chimney, are still true to their trust, and cover its retreat. From this one source have sprung a beneficence of interceding blossoms all along the path — the spotted orange lilies which we just observed peeping above the lichened wall, that tall clump of pink-blossomed phlox, this tangle of blue-blossomed gill. And look! a rare find this— the yellow "whin" of the British downs. What pictures of the

"Green strath and flowery brae,"

through eyes bedimmed, has this bright flower awakened!

"Of love with life entwined,
Of humble faith on bended knees,
Of home joys gone, and memories
Like sere leaves left behind."

The dear old roses too, they must not be forgotten. See how they smile among the ruins — red roses, white roses, pink roses, or even yellow roses — *genuine* roses all, true to their foster memories, their artificial draperies of the floriculturist renounced, now mostly single flowers and fruitful. There is a long list of interesting flowers to be met among these old homestead sites. Of the others which I have found in various localities I might mention the celandine (*Chelidonium*), bladder-campion (*Silene inflata*), motherwort (*Lysimachia*), larkspur, stonecrop (*Sedum acre*), meadowsweet (European), double buttercup (now almost single again), and lastly, the scouring rush (*Equisetum*), with its significant reminders of primitive toil in the shape of the ancient scrubbing-brush, for which these hollow, gritty tubes were in demand by the colonial housewives and maidens.

Neither would I pass them by without a further, more prosaic refer-

ence to these gritty stems of the horse-tail, as the plant is also commonly called. It is well worth our while to pick a few of these hollow segments, and learn a little of the secret of their being; for when immersed in nitric acid their green pulpy disguise is dissolved, revealing an under-



FUSS AND FEATHERS.

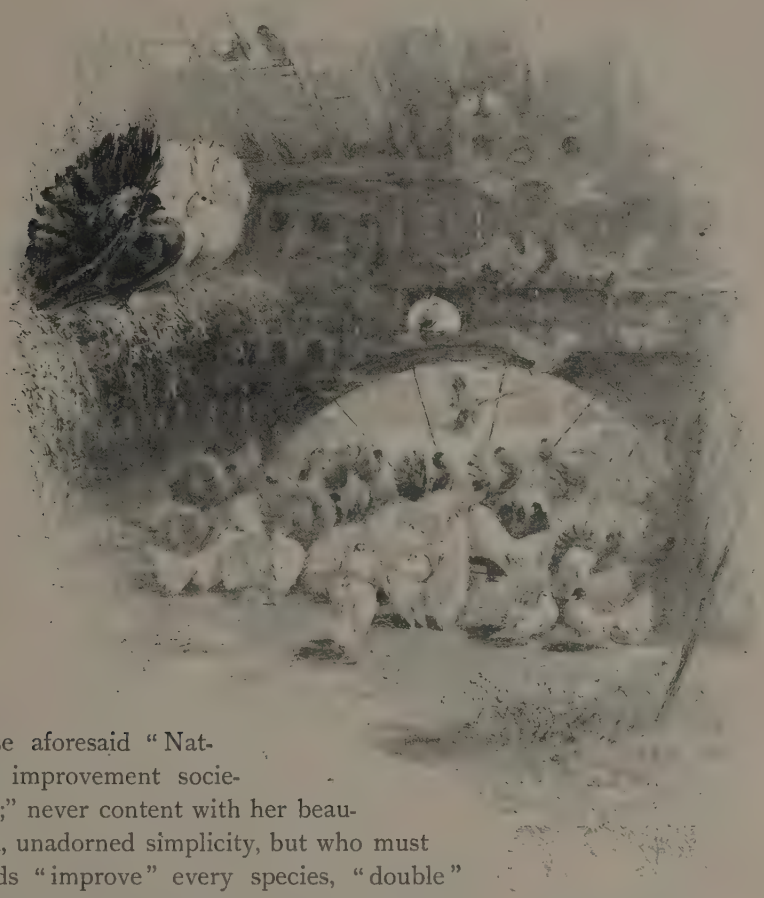
lying exquisite fragile skeleton of glassy silex—an object of marvellous beauty and a rare specimen for the microscopist. This cypress spurge, too (*Euphorbia cyparissias*), already mentioned, is deserving of more than passing mention. Every walker should know it and pay his tribute of

appreciation to its autumn beauty, for there is no such subtle play and blending of color to be found elsewhere in a single plant in the whole array of October tints. The cypress spurge is the spectrum of our autumn iridescence. A bed of it gives the effect of being lit up from some illuminated window — a strange melting quality of color, in which the forms of the myriad individual fringe-like leaves are lost. It is like a small sunset cloud floating on the grass — a spiritualized feature which does not pertain to the plant in its earlier stages. Note the color in this single spray: from the richest of pure greens, gradually impurpled as we follow the stem, now they become a rich olive, and thence, like the iris of a prism, fading through a whole chromatic range — from olive to purple, with blue reflections, to purple maroon, deep crimson, scarlet, pink, orange, and gradually culminating in the purest yellow — the modulation so soft and subtile that scarcely any two leaves of these hundreds are of precisely the same shade. This species of spurge is not common, being only found where its association with some old cellar or garden site betrays its escape from earlier cultivation.

Hundreds of pretty vignettes meet us on our way: A vesper song from a mullein-top; a chipmunk rustling the dried leaves, planting a bunch of hickories for posterity; a reiterated bit of weather-wisdom from the rain-crow somewhere near; a feline challenge from the cat-bird, betraying a nest among the thorn; and now a vibrant twang of the night-hawk cleaving the sky in its precipitous dive into the valley below. Presently, when it hovers near, just toss your hat aloft and observe the quick curvet with which the bird pursues it, almost brushing your face with the sickle-shaped wing. Here is a large saperda beetle nodding his squeaky song on the poplar trunk, and here a black-veined butterfly listless and lulled at the generous milkweed's breast; and now it is a flashing water-fall, or a sweet, low warble from the junipers, or a soft plaint from a mourning dove amid the chestnut-trees. What does it mourn? The degeneracy of its race, perhaps; for it has doubtless somewhere in its travels caught a glimpse of that worldling of its kindred which frequents the haunts of men — the fancier's pigeon.

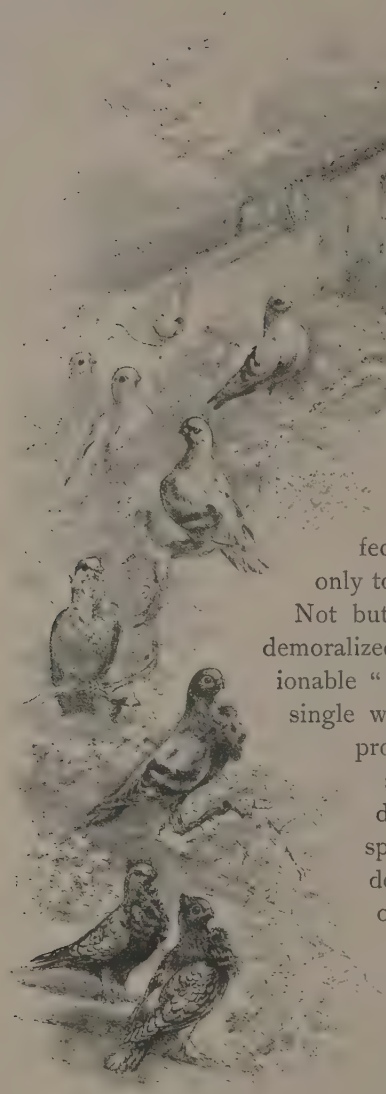
Recently I was desired to make some portraits of these curious birds — a task in which mere scientific interest mainly guided my pencil; for what are these specialties of the professional pigeon-fancier but beautiful monstrosities — though not always even beautiful — analogous to the "double" flowers of the florist — animated feather-flowers, as it were.

This proud fantail, for example, with exaggerated appendage like a huge double hollyhock; this blondinette, with breast like a fringed camellia; this uncouth top-heavy "pouter" strongly suggestive of a big, empty aristolochia blossom, and so on *ad infinitum*—all wonder-workings of



ENTAILED PLUMES.

these aforesaid "Nature improvement societies;" never content with her beautiful, unadorned simplicity, but who must needs "improve" every species, "double" every innocent blossom that they can lay their hands upon—a bait to the enraptured specialist or envious worldling, who is thus happy in getting more show for his money. A double columbine, forsooth! a double violet! a double wild-rose! But there is one salvation in it all. Just in proportion to the degeneracy of these helpless blossoms does Nature refuse to



"HIGH-BRED" HYBRIDS.

recognize their birthright, denying them posterity. The most "perfect" are absolutely barren, and thus are only to be perpetuated by scions and cuttings. Not but that most of us are still sufficiently demoralized to fully appreciate the reigning fashionable "novelty" of the rose culturist. But a single wild-rose, which is the native innocent progenitor of all this proud posterity, should awaken a much worthier and deeper enthusiasm than that which responds to the sensuous beauty of the delicate Nephitos, the graceful Mermet, or the delicious *La France.*

One glimpse of the free, "unimproved" turtle-dove, or even the common "duffer" pigeon, is worth a whole loft of your pretty "high-bred" fantails, blondinettes, barbs, and pouters, nondescript owls, turbits, and tumblers — a museum of freaks and curiosities, perfect examples of native divine grace all run to worldly pride and feather. "Nothing but leaves," says the moralist — nothing but petals and plumes, and consequent fruitless lives :—

"Deep in the woods thy voice I list, and love
Thy soft complaining song, thy tender cooing;
O what a winning way thou hast of wooing!
Gentlest of all thy race—sweet turtle-dove!"

And then, recurring to our walk, there are our own endless childish memories of this old path—how they rise and float across my page as I intercede for the grassy road!—of years when all the weeks seemed playing holidays; of strolls and picnics, hunts and games; of fragrance of sweet orchards and wild-grape blossoms, of aromatic fern and evening-primrose, of wild ripe strawberries and clover, wafted thither. Here the shrubby bitter-sweet climbed highest; here flew the rarest butterflies; here the shagbarks showered down their twinkling nuts among the brown



BIRDS OF A FEATHER.

October leaves and the testy chestnut-burs disclosed their satin pockets, while patient hazels, like their companion harvests of every season, awaited our coming, and dropped their brown clusters into our eager hands.

Is there any music to be compared to the sounds which echo down the years from this old grassy road?—the bright young voices, the

"Pasture bars that clattered as they fell,"

the lowing cows and tinkling bell among the sundown shadows, the responding twilight voice and clinking pail, the birdlike whistle of a lightsome heart, and merry, merry laugh—ah! why should such a merry laugh as that moisten the eye and bow the head?

Hark! what violent discord is this which would break in upon our reverie and disturb the peace and harmony of our old grassy road—this rude commotion in the bushes—a bull, a bear, a tiger? No; worse than these—a Hottentot.

"Rascal! what are you doing here?"

"I'm here be ordthers, sor."

"No such thing. I recognize you. I know your guild too well. Your place is on the road with the 'selectmen.' Keep to the highways, where you belong. Gouge the banks, hack and girdle the trees, mutilate the road-sides with all conceivable diabolical ingenuity, if you will, but spare this quiet, unused path. No one wants you to touch a *leaf* upon it."

"Faith, 'n' wasn't it Misther Goth himself, o' the village improvement society, wuz afther showin' me me day's wurrk beyant, 'n' tellin' me t' *clane it up?* Is it the dirthy wades 'n' bushes ye want, I don' know? Quit, is it? No, 'n' I won't quit. I'm wurrkin be the ordthers uv the town, 'n' faith I'll shtay!"

And now a new impetus seems to possess his brush-hook. A beautiful Virginia creeper, which for a decade has draped the neighboring apple-tree to its summit in its alternating verdant and scarlet festoons, is severed at its root in a single stroke, and now the canopy of blossoming clematis is torn from its long, airy rest above the overhanging bushes by the wall, as he pries his way among them with eager blade. I cannot stand and see this butchery. I— 'Sh! never mind. Let us leave him. The Fates will care for him. Blessed is the Vandal who is innocent of botany! to whom the poison sumac gives no timely token! I would not raise my hand to restrain him; for, after all, is he not engaged in honest toil? and will he not get his reward? Meanwhile, let us haste to intercede with Mr. Goth, for our grassy road is indeed in peril.

Yes, the grassy road is a prize indeed. But, alas! even a grassy road, like all dear possessions, brings its proportionate anxieties. How earnestly shall I pray for that subtile grace skilfully to propitiate the kindly, generous, philanthropic village-improvement-society man who owns the opposite bank!

In a certain nameless town in Massachusetts, where Nature has been cut and scraped to the bone, her very vertebræ of granite laid bare in unsightly, barren fields, I knew of a hotel proprietor who had owned a large contiguous tract of forest land, the only piece of wood then left in the immediate vicinity, a beautiful oasis in the desert, which had kept its memory green for years in the hearts of a host of its summer pilgrims. But it was sold to the Goths and Vandals for a song, because, as our worldling said, he "couldn't afford to throw away six hundred dollars *for mere sentiment!*" Thus the last remnant of the temple of the

groves was sacrificed — went up in smoke from the pipes of the charcoal fiend.

A blind speculation this. The pocket was heavier that year, but I fancy, and certainly hope, that it has been deservedly lighter since than ever before.

Therefore, whether from considerations of sentiment or worldly motives, I pray you, "Woodman, spare that tree!" Cherish the old grassy road, my village! my Judea! Guard it as the apple of thine eye, the jewel of thy coronet. Bar up this "living way" as consecrated ground.



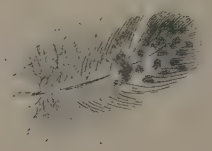
AFTERNOON SHADOWS.

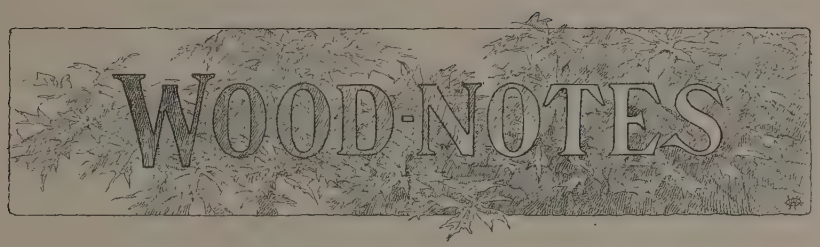
Shut out every foot-fall which shall approach it without reverence, and set this warning at its threshold:

No Thoroughfare!
Goths and Vandals beware!
Let no "beautifying" hand enter here.

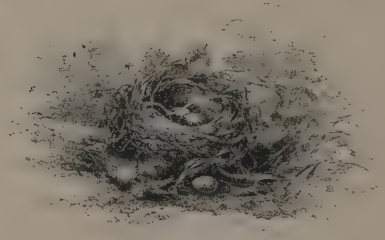
And so adieu, my grassy road. When next I return to thee, may these cobweb barriers which the evening zephyrs are now floating across thy door-way be still unbroken!

OUR mute four-footed friends and the winged songsters of our woods! might it not be lawful to regret them even in the hallowed groves of Paradise? HAWTHORNE.




WOOD-NOTES

"WHEN he came to grene wode,
In a mery mornynge,
There he herde the notes small
Of byrdes mery syngynge."





MOREOVER, you must walk like a camel, says the seer of Walden; for the camel "is said to be the only beast which ruminates when walking." An ideal motto for the saunterer, truly! remembering that the camel is by nativity the most venerable of "Holy-landers." But the saunterer is not always a "walker." "Ill suits the road to one in haste." Does he not often find it both pleasant and profitable to come nearer home for his prototype, and emulate the more tranquil example, "our rural divinity," the cow—to "lie down in green pastures" or other conducive haunts, chewing the cud of quiet speculative contentment?

Moreover, there are doubtless rare special manifestations known to our "rural divinity" in her wooing retreat—shy, still small voices which the ambling camel never hears.

"Everything comes to him who waits" is the motto for the woods. There is the saunterer passant gardant, and the saunterer couchant gardant. The first is a seeker, the other is sought. In the one it is the hunter who seeks his game, and in the other it comes to him and "perches on the barrel of his gun." One has only to sit still in the summer woods for an hour with eager anticipation—that true talisman to discovery—and with a quiet alert eye to witness the whole tribe of wood-folk at his elbow or running across his foot. But there must be this inviting repose in the eye, the mind, and body. I recall an instance of an acquaintance who had visited the sea-shore for years, and had still failed to discover the cause of those numerous holes in the sedgy sand at his feet. Always empty and meaningless, they puzzled him. Had he been content to sit and reverently wait, Dame Nature would have recovered from her surprise and have sent her minion to welcome him at the door with odd obeisance and an extended claw; for such is the veritable and humorously hospitable custom of the fiddler-crab to those who respectfully await at its threshold.

Thus the too impetuous seeker may frighten the coy dame into her retreat. Recline with patience upon this mossy rock here in the congenial company of the walking ferns — true saunterers they — and she will soon gain confidence, will woo you from the branches, from the flowers, or, in the guise of mouse or of squirrel, will creep into your bosom as close to your heart as you will permit. Ah! say not that this is a forced figure, for even in bald literalness I have known precisely such a happening.

That has never seemed to me a marvellous page of Thoreau's which describes his intimate companionship with the birds and furry neighbors of Walden. There would seem to be nothing there but what any truly sympathetic spirit would invite or might not reasonably anticipate. The same confidences, I believe, are open to any one who will meet them half-way.

"We are as much strangers in Nature as we are aliens from God," says Emerson. "We do not understand the notes of birds. The fox and the deer run away from us." But to those worthy of their companionship there are few strangers in the forest.

Sitting alone in the woods, I have sometimes known a moment of such supreme exaltation that I have almost questioned my sanity — a spirit and an impulse which I would no more attempt to frame into words than I should think to define the Deity himself. "I am glad to the brink of fear." My own identity is a mystery; the presence of the dearest friend on earth would be an unwelcome intrusion. The pulses of the woods beat through me. The joyous flight of bird brings buoyant memories; that linnet's song now seems swelling in my own throat. Happy Donatello in the gardens of Borghese no longer is a myth, though even he knew no such joy as this.

At such times — and are they not vouchsafed to every true "Hollylander?" — I am conscious of an unwonted sympathy in Nature — a strange double paradoxical existence which, while lifting me to the clouds, still holds me enchantingly to earth.

At such times boundless confidences seem open to us; anything seems possible. Have you never stood at the edge of a precipice and realized that you could fly? I have approached a squirrel running wild in the woods, have seen him pause to wait for me, while he permitted himself to be taken into my arms and caressed. I captured one thus in the pine-woods of North Conway. Had I been alone, what old-time confi-



THE EDGE OF THE WOODS.

dences might we not have exchanged together? but there were witnesses, and I think that the unworthy self-consciousness of my proud distinction

served to break the spell. My pet discovered that I was only a degenerate human being after all, and quickly made his escape.

I have often felt the contact of the plumy halo of the hummingbird above the flowers; yes, and know what it was to have him nestle contentedly within my palm as I drew my fingers about him in his hovering poise. I have taken the winged jewel to my room and covenanted with him as he perched voluntarily upon my finger, and preened his ruby breast and tiny wing. Yes, my incredulous reader, and other eyes observed this also.

And yet I do not mention these with any spirit of the marvellous. I am no wizard, and my presence in the woods is no signal for any special manifestation, any more than that of any other truly sympathetic seeker.

A few summers ago, while loitering on the piazza of a White Mountain hotel, a gentleman acquaintance, one whom I had occasion to know was a true disciple of the woods, approached me from the direction of a neighboring pine grove, and with a pleased expression upon his countenance he motioned for me to look within his inside coat pocket, upon doing which I observed therein a quiescent throbbing ball of soft red fur — three half-grown red squirrels in a complex huddle of palpitating sleep.

Seated beneath the pines in his wonted wooing mood, he had observed a young squirrel emerge from its hole in a neighboring tree, eying him cautiously. Evidently satisfied that there was nothing to fear, the little wildling came down, and, after the manner of its tribe, essayed a closer acquaintance with its visitor, now darting across his foot, presently gaining confidence and creeping to his knee, and frisking off again. Now it is once more on his knee, now in his lap, and being perfectly assured and won by the quiet sympathy of its new friend, proceeds up his sleeve in quick jumps, around his collar, down upon his breast, and in a moment more is snugly curled up in his inner pocket. During this episode another of the furry family had appeared at the hole in the tree, and, only with less hesitancy than the first, pursued the same identical manœuvres, and still a third followed in their very foot-falls, until the entire brood of wood-babes nestled in his bosom. Thus as I have said— how close will Nature get to the heart of man, if it is but warm enough, and he will only permit her!

The sleeping pets were brought to the hotel, where they were disclosed to hundreds of wondering eyes, and creating a bedlam among

the children, being finally disposed of to a trio of happy little girls who were so fortunate as to possess cages for the pets.

Late in the evening sobs were heard in one of the children's rooms. The little "bunny" had escaped through the bars of its cage, and was nowhere to be found. In the midst of the little girl's tribulation a knock was heard at her door, and the original foster-parent appeared with the furry fugitive in his hand. Passing through the upper hall on



"DON'T YE WINK."

the way to his room, he had suddenly felt the clinging presence upon his garments, had recognized the welcome touch, and knew perfectly well just what would happen, for in a moment more the waif had curled up in its former place within his pocket.

I remember the mingled envy and respect with which I contemplated this worthy man; for, although only a chance acquaintance, I desired no other certificate of his character. With the lingering memory of one such

episode as this, how may we laugh at fortune! how paltry "the evil tongues, rash judgments, and sneers of selfish men!" "Let them rave." The sneer of Mr. A or Mr. B of Broadway — ha! ha! what a merry trifle!

Thoreau tells, and the world is fond of retelling, of a sparrow which lit upon his shoulder while he was hoeing in his garden. He was indeed blest, but I know of an incident which I should like to lay beside it.

It occurred not in the woods nor garden, but in the prosaic metropolis, and this upon an election-day. The hero of my story had joined a line of his fellow-citizens at the polling-place, a low, obscure room with only one small door and murky windows. Having waited his turn, and having approached the ballot-box, fully twenty feet from the entrance, there was suddenly a flutter of whistling wings about his head: a white dove had flown in at the door. It hovered above the crowd, singled out its friend, and presently lit upon his hand. For a moment it permitted itself to be caressed, and even responded after the fashion of its more mortal type, when it suddenly took wings and flew away as it had come, leaving in its void the atmosphere of a dream.

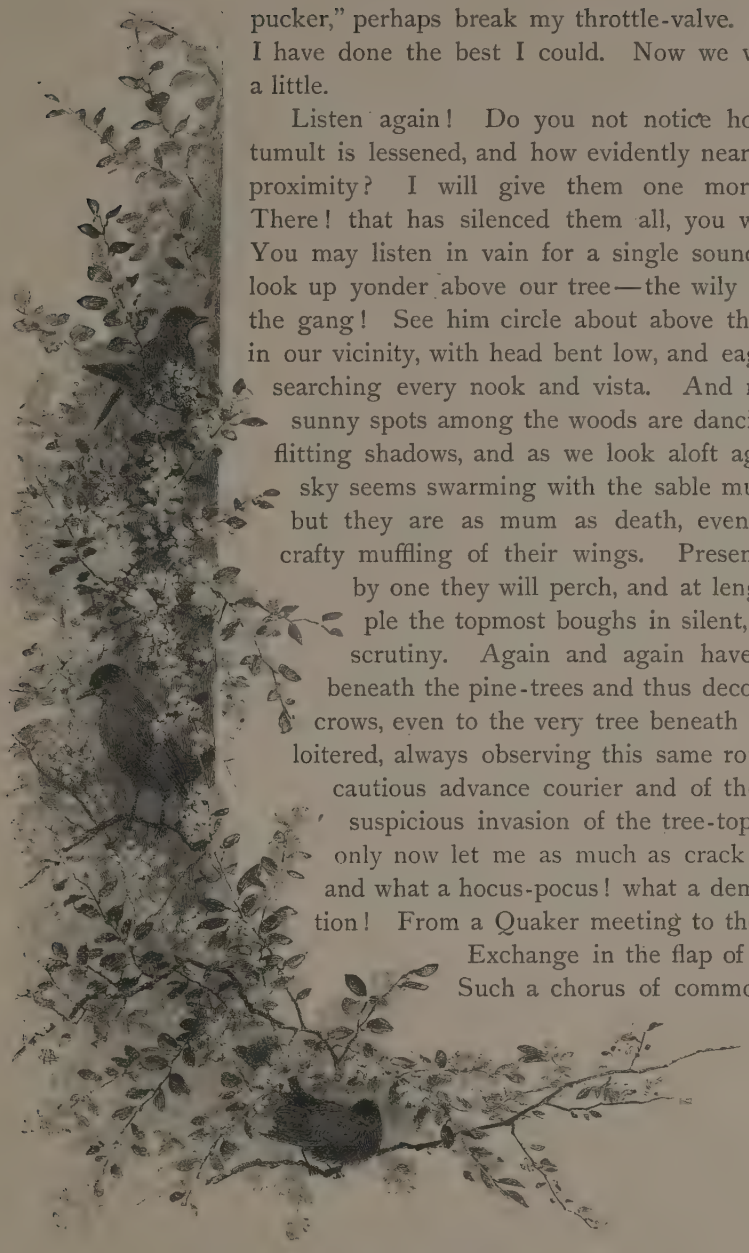
"Your dove?" inquired the astonished citizen at my elbow. But I had never seen the bird before, nor had any one else; neither could I learn of the presence of a pigeon-loft within the neighborhood.

I would not be thought morbid or superstitious, but in my better moments I believe that this white dove brought me a message. As yet I know not what it was. Some day I shall doubtless discover it, and perhaps also the dove-cote whence it came.

A white dove at the polls! — purity and politics! Does the millennium hover near?

It is noticeable in many ways with what a kindly spirit these Nature broods will meet you on their own ground if you are truly converted. Even when you go a step further, and strive to converse with them in their own tongue, how willingly, surprisingly, indeed, they seem to ignore your palpable shortcomings, as though detecting the right intent even in your crudest and most primitive efforts! I have often surprised myself at the ease with which I could call about me a convocation of chickadees or a flock of jays, a robin or a wood pewee, and other birds.

Hark! Do you hear that distant jargon of the crows? Come, sit close against this shaded beech trunk and await developments; only as I play the liar don't gaze at me, I beg. 'Twould disconcert me, "spoil my



CATBIRD ANTICS.

pucker," perhaps break my throttle-valve. There! I have done the best I could. Now we will wait a little.

Listen again! Do you not notice how their tumult is lessened, and how evidently nearer is its proximity? I will give them one more blast. There! that has silenced them all, you will find. You may listen in vain for a single sound. 'Sh! look up yonder above our tree—the wily scout of the gang! See him circle about above the woods in our vicinity, with head bent low, and eager eyes searching every nook and vista. And now the sunny spots among the woods are dancing with flitting shadows, and as we look aloft again the sky seems swarming with the sable multitude; but they are as mum as death, even to the crafty muffling of their wings. Presently one by one they will perch, and at length people the topmost boughs in silent, curious scrutiny. Again and again have I lain beneath the pine-trees and thus decoyed the crows, even to the very tree beneath which I loitered, always observing this same routine of cautious advance courier and of the silent, suspicious invasion of the tree-tops. But only now let me as much as crack a twig, and what a hocus-pocus! what a demoralization! From a Quaker meeting to the Stock Exchange in the flap of a wing. Such a chorus of commotion, of

laughs, screams, and hoarse guffaws, until at length it dies away in the distance, where we may even yet catch the burden of the reflective observations at the council tree! Haw! haw! Oh corvus! corvus! Shaw! shaw! shaw!

I hesitate, however — naturally enough, too — to take especial credit to myself for my ability thus to deceive this crafty guild, remembering that I once depicted on canvas the life-size portrait of a mastiff, which was so apparently and creditably truthful that when the dog discovered it on the wall he made a rush for it, and barked furiously — a doubtful compliment, it would seem, forasmuch as my friend suggested that he possibly "mistook it for a *cat*."

This might serve as a key to this curious caucus of the crows — perhaps in reality, as my friend might say, only a relief committee despatched to look after some desperately ailing brother.

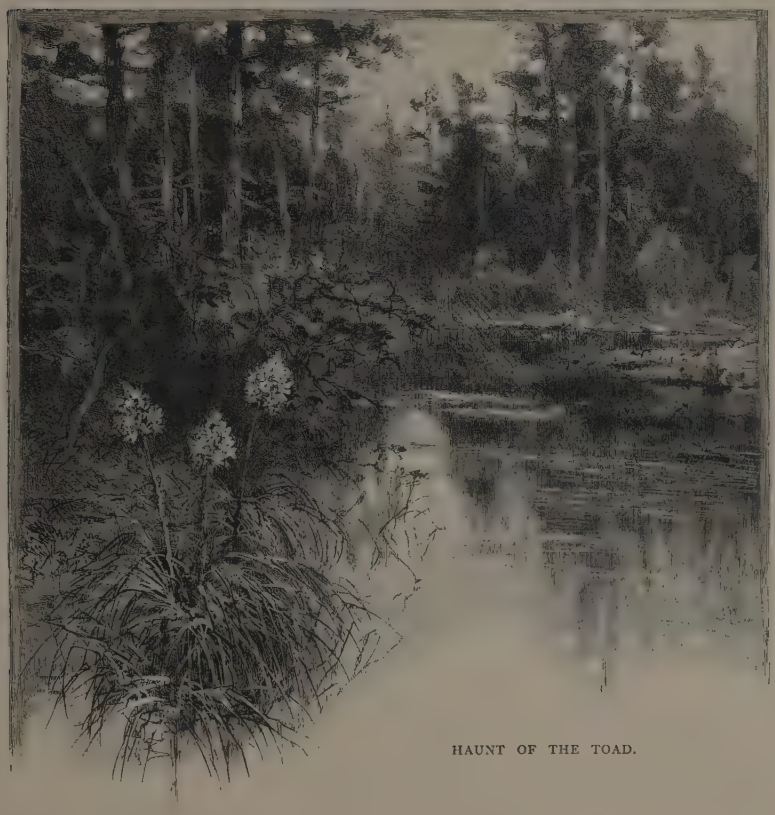
The chewink is another bird that I have often thus brought within close eyeshot. What an amusing, artful fellow he is! for I am persuaded that there is more significance in that foxy-red vest of his than is generally accredited.

Once after having amused myself, as I supposed, at his expense for a full half-hour, I suddenly discovered that I, and not he, had been playing the fool. While watching with much self-credit his queer antics as he hovered about my concealment, I chanced to observe his mate alight for a moment on a distant branch just long enough for me to note the caterpillar in her bill, and tell me that her brood nestled somewhere near at hand. Taking the angle of her flight as a guide, I arose from my covert to seek the nest; and then began the ejaculatory jargon from the thicket. "*Don't ye wink! don't ye wink!*" said this alert picket-guard in the plainest Anglo-Saxon as I prowled around among the undergrowth. A moment's search revealed the nest embedded in the leaves at the foot of a tree close by, and containing four callow young.

Seated at a new point of view, I lingered to observe the mother-bird return. But I waited long and vainly. As I arose once more to depart, what was my astonishment to observe her deliberately get off the nest before my eyes, run a few feet, and fly up among the trees! Thus twice she seemed to spirit herself upon her nest, and elude me even as I looked, while her confederate in the hocus-pocus kept up his continual diverting pleasantry. At length I thought of an aid to my investigations, and approaching the nest, I tucked within the meshes of its far-

ther side a small piece of white paper — a focusing-point — somewhat after the manner of the night hunter of the deer, who during daylight sights his stationary rifle upon a piece of phosphorescent wood adjusted above the baited salt-lick, and waits in the darkness to observe his "fox-fire" obscured ere he pulls the trigger.

Imagine my surprise, however, to observe this white spot disappear,



HAUNT OF THE TOAD.

apparently without any intervention, even while I looked upon it; and of my still further surprise to discover, on a nearer approach, the quiet, soft-eyed bird demurely sitting in front of it, and revealing it again as she took wing.

"*She winked! she winked!*" cried a hovering voice from right and left, apparently accepting no other theory of discovery. Thus, then, was

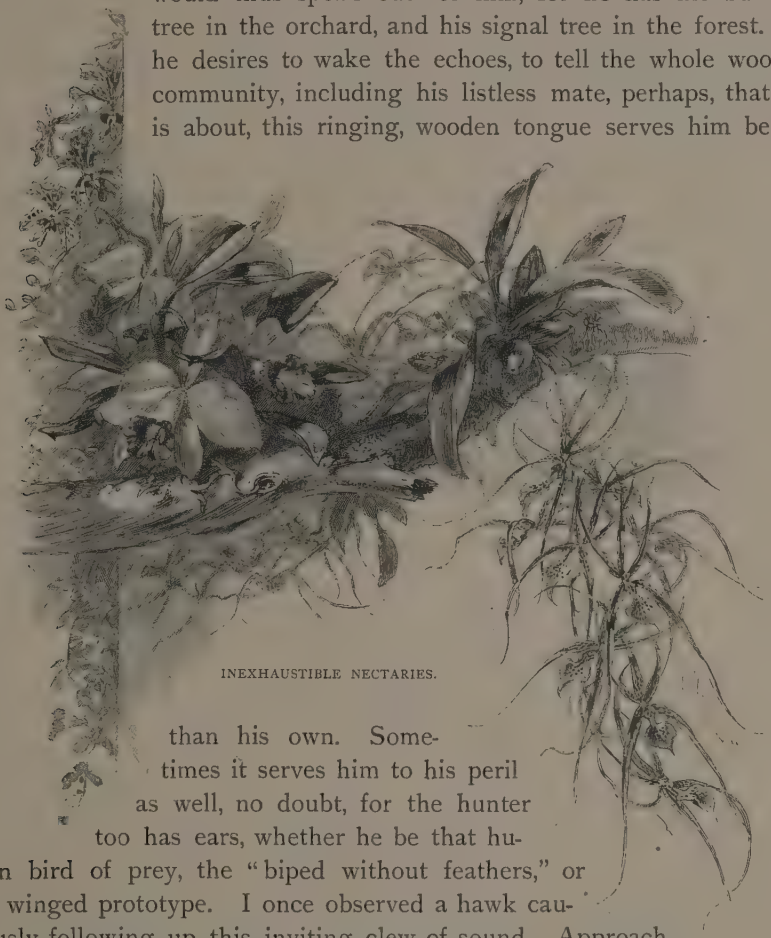
the riddle of her presence solved. She had kept the tree between us in her approach, and apparently awaited an opportune moment when my eyes were directed to her arch-confederate, to steal around the base of the trunk and glide upon her nest — an act which I soon observed — and where once nestled, she so assimilated herself to her surroundings that I doubt if the dried leaves themselves knew of a foreign presence among them. Yes, the ground-robin comes honestly by his motley.

The veery, the nuthatch, the Maryland yellow-throat, and the daintiest feathered forms of tiny warblers will come about your woodland haunt without decoy or other invitation. The cat-bird among the fringy undergrowth at the edge of the wood will "dart and mew," and otherwise beguile your amused attention by the hour. I doubt not that I could stroke his gray coat if I really and determinedly attempted. I have often come very near it without half trying.

In the late spring twilights the drowsy drool of the toad is heard in all the swamps and ponds. This song is commonly attributed to the frog, but it is none other than that of the common toad of our gardens, now retired to his native element and swelling his throat in his nuptial song. He is mostly a nocturnal piper, but is occasionally fooled by a dark, cloudy day, or perhaps by an artful biped on the bank; for the toad apparently has little sense of discrimination — a very poor apology, in imitation of his song, bringing a ready response from first one and then another, until the air and water soon palpitate with the full crescendo. I have thus several times lounged beneath the trees at the water's edge and enjoyed my vesper chorus at mid-day; but it was only sound, after all, the sweet witchery of this song breathes only in the glamour of the dusk.

"Listen and look intently, and catch the exact effect as nearly as you can," says a well-known contemporaneous saunterer. Strolling through a thick wood one day, I heard the familiar guttural notes of the cuckoo, or rain-crow, among the trees not far distant. A closer analysis of the sound suggested a peculiar quality not before noted, and I instinctively picked up two bowlders from the stone wall which ran through my covert, and by striking them together with a slight rebounding pressure and a gradually accelerated stroke, to my surprise I decoyed the bird so close that I could see the color of its eyes. I hope to get another opportunity to repeat the test, and assure myself that the episode was not an accident or mere coincidence.

How the resonant tattoo of the woodpecker rings out through the arches of the vernal wood! It has proven a puzzle to many that this tiny hammer should possess the power to awaken such a volume of sound. But the secret lies not so much in the hammer as in the drum—the dry, vibrant wood. The bird is not here for food; no crumbly, soggy timber would thus speak out for him, for he has his bulletin tree in the orchard, and his signal tree in the forest. If he desires to wake the echoes, to tell the whole woodsy community, including his listless mate, perhaps, that he is about, this ringing, wooden tongue serves him better



INEXHAUSTIBLE NECTARIES.

than his own. Sometimes it serves him to his peril as well, no doubt, for the hunter too has ears, whether he be that human bird of prey, the "biped without feathers," or his winged prototype. I once observed a hawk cautiously following up this inviting clew of sound. Approaching from behind the tree, he made a sudden dash for the spotted quarry. There was a commotion of wings, a shower of falling twigs and lichens, but the nippers and the hammer never met. Downy was off with flying colors, and the reveille of victory soon resounded from a distant tree.

In the haunted twilight of the woods how are one's pupils enlarged! Here the restive outward eye is stilled; the inward eye takes courage—

"That inward eye, which is the bliss of solitude,"

and the retina, now lulled and quiet, receives its noblest images from within rather than from without.

Was it not affirmed in the Egyptian mysteries that "there are two pairs of eyes in man, and it is requisite that the pair which are beneath should be closed when the pair that are above them perceive?"

This higher, nobler harvest of the saunterer — the winged thoughts and aspirations — who can jot these down? Certainly not I, when even the trifling tributes to their lowly symbols perplex my pen and pencil. Would that I *could* jot them down — proclaim them from the housetops! What a hegira to the woods! what a pilgrimage to this Mecca, this New Jerusalem! For the woods are paved with symbols — eager, buoyant stepping-stones every one of them.

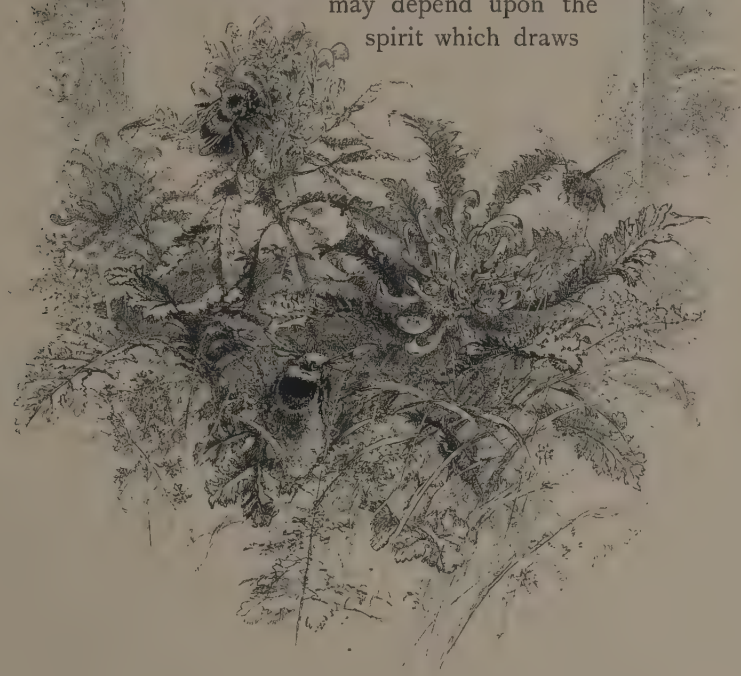
"Not a natural flower can grow on earth
Without a flower upon the spiritual side,
Substantial, archetypal, all aglow
With blossoming causes — not so far away
That we, whose spirit-sense is somewhat cleared,
May not catch something of the bloom and breath."

Thus, while the study of flowers may prove an exalting pursuit, still it may be a truly pitiable thing to be a botanist — a peripatetic, anatomical chart, as it were — a technical vocabulary of wise terms and synonymes, like that wisehead unfortunately blest, while "with loads of learned lumber in his head," still with a void at his heart. Even yet he may not know a single plant. The orchid has been "known" for centuries by a host of worthy botanists; but, after all, what a cold, unenviable acquaintance was theirs! What of the blossom's counsel had they received? what else than an extortion under protest, as it were — a shrinking confession forced from the flower at the point of the knife?

Fancy a greeting such as this: "Ah, my woodland darling, over there among the ferns! I know you! I recognize you! I cut your throat last year, and laid open your heart. I found out your name; it is *Pogonia ophioglossoides;* order, *Orchidaceæ;* tribe, *Arethusæ.*"

But, alas! I blush; I bow in penitence! There are, indeed, "two pairs of eyes in man." How many a mutilated waif, whether of blossom, bird, or insect, lies at my door!—faces which I now meet in the woods with tingling cheeks, and wonderings whether I have been forgiven.

It has been also declared that only when the "eyes which are above are closed should those beneath be opened." But the simultaneous dual vision seems not impossible nor inconsistent. Much may depend upon the spirit which draws



THE BUMBLEBEE'S PROTEGÉ.

the trigger or whets the blade. Even in the cell and in the chlorophyl are messages from Him.

There is something, then, beneath the mere superficial humor in that quaint counsel of dear old Izaak Walton, when, after giving minute directions for the baiting of the "armed wire" with a frog, "putting the

hook through his mouth and out at his gills," he concludes, "and in so doing use him as though you loved him."

Thus, while the orchid has been *named* for centuries, it was reserved to a seer of modern times to be admitted within the strange portals of this flower and receive its confidence. The nectary of the flower is but a symbol of a deeper correspondence. The bee may take his fill to-day, but may find renewed supply to-morrow.

But, as I have said, there are bees and bees. Hermann Müller, the eminent naturalist, was the first, I believe, to record the instance, now so frequently observed, of the bumblebee endeavoring to outwit Nature. Discovering her inability to reach the sweets of a columbine blossom in the manner designed by the construction of the petal, this impetuous seeker climbed to the tip of the purple cornucopia and, burly little burglar that he was, bit through its walls and stole its treasure. But I fancy that the sweets thus rifled were the last ever yielded by this flower. The bumblebee, whether in natural or figurative fields, it would seem, is not always the *humble* bee.

Thus the mutilated flower may disclose its wonderful anatomy and its physiology, but never its soul. The sense of this is only revealed to him who dwells in the pleasant faith that "every flower enjoys the air it breathes," who knows and loves and spares it breathing in its haunts, a strange, questioning companion in his earthly pilgrimage. It is notable that the profoundest botanical researches of Darwin are not those which have been developed at the point of the dissecting-knife, or coaxed from the withered mummy, but the revelations which were disclosed to his patient devotion from living, palpitating plants often in their native haunts. Thus the truest botanists and those most nobly blest are often they who know the least of *botany*, who perchance are guiltless of Latin, innocent of scalpel, and, let us hope, fortunately ignorant of the dry and musty catacombs of the *hortus siccus*.

Who has not been brought closer to the flowers and insects through the spirit of such books as those of Darwin, Sprengel, Müller, Huber, and Lubbock? How these volumes lift the veil! how they sharpen and equip the eye to interpret the hieroglyphics of wood and field! With what awe and respect we now look upon the humblest blossom! Where shall we begin? Even here at our elbow in the woods is a plant which we have all known since childhood. The wood-betony, it is called — to select its worthier title (*Pedicularia Canadensis*) — a common early flower

of our woods, blooming in company with the uvularia, Solomon's-seal, crane's-bill, downy yellow violet, and others, the plants growing in fern-like tufts, with scattered blossom heads of varied shades of yellow, pink, or even carmine.

I remember reading a few years since a remark by a prominent botanical authority concerning this flower, observing that its fertilization was a puzzle, as insects were rarely to be found upon it, which observation, taken together with what I had observed of the strange form and disposition of the blossoms, and the curiosity awakened by my reading, possessed a peculiar significance for me.

In the light of Darwin's and Müller's pages, how eagerly I now sought the haunt of my wood-betony, and how readily, too, it disclosed the secret which had heretofore escaped me as well as other earnest though too hasty seekers! Visiting a certain wood path where the plants grew in profusion, I seated myself among them, and observed carefully. It was in the middle of May, and the flowers were in their prime, and in such omnipresent profusion that I felt assured some honey-seeking insect must soon be tempted thither among the tens of thousands of brimful nectaries.

I had not long to wait before a well-known "drowsy hum" fell upon my ear, and a large bumblebee alighted upon a flower-head close by. In his habitual impetuous fashion he rifled the sweets from one and another of the blossom-heads, so lost in his absorbing work that I was permitted to steal close upon him and observe his eager method, for method, indeed, there was in every movement. In almost every instance he made his approach at the base of the flower-head, and followed around the spiral arrangement of the flowers to the summit of the cluster.

It needed only a single glance to receive an instant revelation of the reason which lay beneath this singular and always heretofore mysterious spiral arrangement of the flowers — their spiral arrangement not only, but the individual lateral curve of each separate blossom, which in every case brought the opening of its tube facing to the left. A moment's careful attention to my burly little interpreter revealed also the strange utility of the singular fissure down the right side of each corolla — a slit in the flower-tube extending from its throat half-way to the base of the tube, but only on one side. Why on one side and not the other? why always on this outer curve of the flower? These had been ques-

tions which I had frequently asked myself when examining this queer one-sided formation. But they were now answered to my satisfaction. The whole arrangement of these flowers, together with their individual tendencies, show a direct, conscious affiliation to the bumblebee, affording as perfect an illustration of the sympathetic dependence between flower and insect as we may find among the wonders of the orchid tribe so beautifully and clearly disclosed by Darwin.



AN INTERESTING VAGABOND.

What is this peculiar spiral progression if not an inducement of convenience — an inviting flight of stairs, as it were? What is this individual turning about of each separate flower, if not a welcome invitation to its heart? and what is this strange fissure at the side but a facility to aid and to "speed the parting guest?" And through all this, how beautifully, by what wondrous art, has his mission been fulfilled! Observe our bee closely with me. He now alights obliquely at the base of a flower-head, inserts his head deep within the tube of the lowest flower, the strange fissure assisting in the expansion of its tube while his long tongue probes its nectary. His wedge-shaped head has forced apart the compressed sides of the corolla, thus opening the pollen-box (the compressed anthers) within the walls of the arched tip of the flower, the yellow fertilizing powder falling upon his head. He has now emptied the horn of plenty, when, almost without withdrawing his head, he slips his tongue through

the ready exit — the fissure in the flower-tube — to find an expectant, inviting face turned towards him, and in the most convenient possible attitude for his kiss.

He proceeds as before, but not until he has unwittingly paid his toll and won his right of way, having deposited the requisite touch of pollen upon the overhanging tip of the stigma, and thus cross-fertilized the flower. And thus he pursues his course to the summit of the spiral, carrying from its latest anthers a vivifying touch which secures in the next flower-head he visits the still more important function of absolute cross-fertilization from a separate plant. Indeed, it is doubtful whether the pollen from separate heads is not more or less continually intermingled, and this end secured in all the flowers, considering that only a grain or two of the thousands are required to insure the fertilization of the ovules.

Within an hour after the discovery of the first bee upon the wood-betony, the woods were murmuring with their mingled hum. I counted twenty of the insects at work within a radius of ten feet, and wondered that I could previously have been so blind.

Here, then, is a wild flower of our woods which owes its continued existence to the "epicurean of June," the ward, if I may so speak, of the bumblebee, sharing the honors with the red clover, which fastidious plant, it is well known, would become extinct, perish in celibacy, without the sanction of this busy little marriage-priest.

In an endeavor to establish our clover crop in Australia, it was discovered that while the first sowed growth from imported seed thrived luxuriantly, it ripened no seed, and thus defeated its self-perpetuance; and all because *Bombus* was not consulted. At last accounts, I believe they were talking of an importation of a few ship-loads of bumblebees, to insure the crop, with what success I am at the moment in doubt. Thus, when this "breezy hum" of the Bombus is heard no more in our meadows we must say good-by to the red clover.

And now, apropos of such an extremity, I am reminded of that remark of Darwin, who traces back a little further to the source of our obligation. Clover, he reasons, depends upon the number of cats. No cats, no clover. Clover will not produce seed unless its flowers are fertilized by bumblebees; the nests of the bees are eagerly destroyed by mice; cats kill the mice — thus the bees are spared, and having these the clover is insured. Very good! "Cats and clover" as a context may

be more alliterative, but most of us who are at all given to sentiment will welcome the interposing links in the chain of cause and effect.

By what endless devices does Nature thus secure her ends! The design beneath the construction of *any* flower we may pluck — often the very commonest by the roadside — is a profound riddle, often unanswerable until we await the oracle of its chosen mouth-piece, perhaps the one confidant for whom it has been adapting and shaping itself through the ages.

Here is another familiar face. We all know him — the tramp of the underwoods; for who, in spite of himself, has not brought home the "beggar's ticks?" *Desmodium accuminatus* the records have him down. Look out for him in the rogue's gallery. See him now! with clustered leaves and saucy chains of seed-pods and airy tips of pink pea-blossomed flowers!

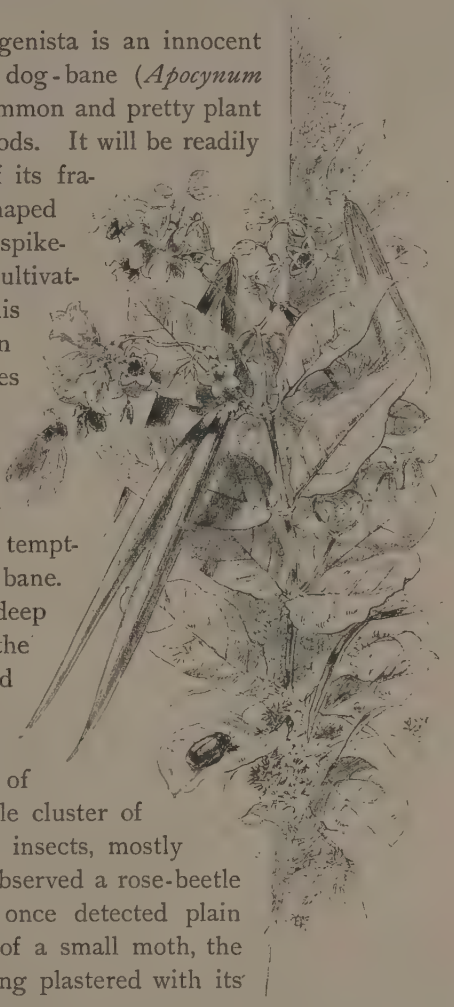
So, so, my impetuous vagabond, you have a slap for all, for tiny bee and fly as well as me. You secure your posterity by the same aggressive arts with which you perpetuate their vagrancy. A little fly alights upon the small pink blossom, when, lo! the flower explodes, the insect is greeted with a slap on the face or breast, and a dab of dust in his eyes. For this flower, like many others of its tribe, is a veritable trap, delicately set. Upon the slightest touch the loaded spring — consisting of the rigid column of filaments enclosing the young pod — is released from the overlapping petals, and the anthers hurl their shower of pollen upon the body of the intruder. But observe the wise adjustment beneath all this mechanism. The stigma — the organ through which the seeds are fertilized — projects a little beyond the anthers, and is the first to come in contact with the insect, and thus gets a supply of pollen from the previously visited flower.

In the lucerne (*Medicago sativa*) the flowers are similarly explosive, and it has been observed that bees find this continual belaboring unpleasant, and contrive means of obtaining their nectar without touching the trigger — a skilful operation, it would seem, when we consider that the touch of a butterfly's tongue is commonly sufficient to explode the flower.

The woad-waxen (*Genista tinctoria*), the identical "whin" of the English downs, now sparingly naturalized in some sections of New England, affords, perhaps, in the large size of its flowers and rigid tension, the best illustration of this peculiar explosive mechanism to be found

among our flora, and, like the various desmodiums, is well worth a little study in its haunts. The two forms of the flower, both before and after explosion, are easily observed upon almost any single plant.

But the sprightly trap of the genista is an innocent affair compared to that of the dog-bane (*Apocynum androsæmifolium*), another very common and pretty plant frequenting the borders of our woods. It will be readily recognized by a mere mention of its fragrant clusters of pinkish, bell-shaped flowers, and its long, drooping, spike-like pods. I am told that it is cultivated for its beauty in Europe. This plant has been accused of "wanton cruelty," and, unlike the instances of the carnivorous sundew, which really feeds upon its insect prey, there certainly would seem to be a needless sacrifice of the trusting innocents which investigate the temptingly baited blossom of the dog-bane. Only let a fly thrust its tongue deep enough within, and in an instant the stamens fasten upon its tip, and hold the struggling prisoner in a grasp from which he seldom escapes alive. I have seen several of these buzzing prisoners on a single cluster of flowers, besides numbers of dead insects, mostly flies. On two occasions I have observed a rose-beetle struggling for his freedom, and once detected plain evidences of the painful surprise of a small moth, the opening of the sticky blossom being plastered with its fuzzy brown scales.



THE DOG-BANE AND ITS VICTIMS.

It is still a mooted question, I believe, among the specialists whether there exists an actual automatic movement of the stamens, or whether the capture of the insects is not mainly owing to the very sticky pollen. In either case, however, it

is a dangerous well-hole for the small-fry among the insects to play about.

Thus we observe a few of the methods by which Nature perpetuates her species — and here's another. Have you not noticed the smoky cloud for some time enveloping our path, and the yellow powder with which our shoes and nether garments are dusted? We have entered the haunt of the *Lycopodiums*. On every side their ever-green carpet screens the mould, sending up its thousands of slender stems of spore catkins, every one of which bursts into a floating yellow cloud upon the slightest touch. Stoop down and gather the sulphurous powder in your handkerchief, shaking it from the spiry fruit-tips. A handful may be thus collected in a few moments. It will be found to resemble sulphur, in more than looks, too. A lighted match held amid this tiny cloud will precipitate a smart explosion. It would be dangerous for yonder fire-bird to hover in this inflammable neighborhood, surely.

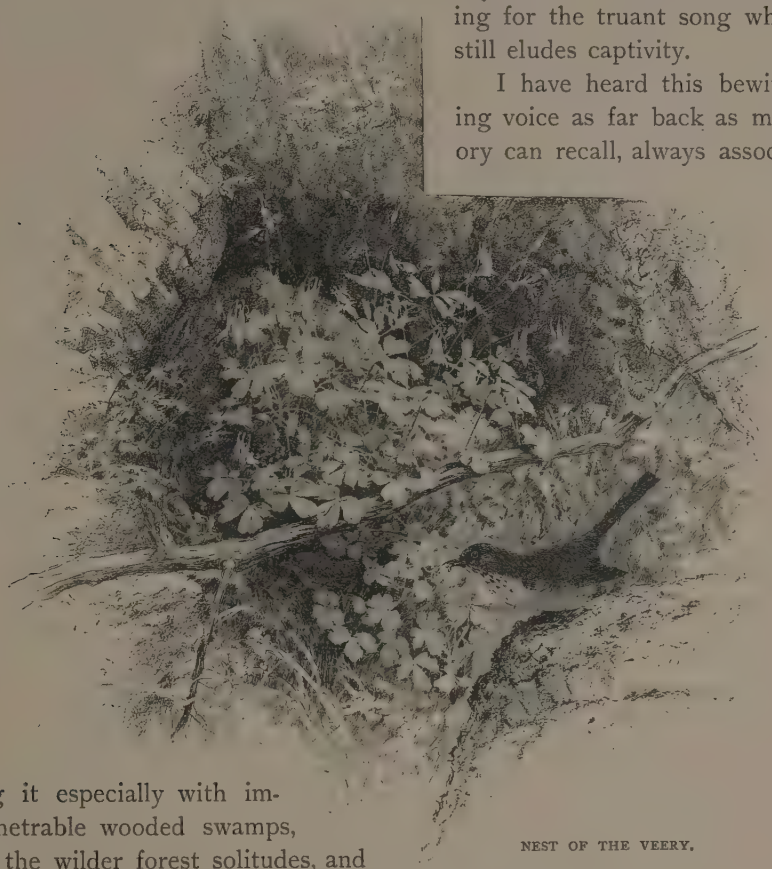
All of the club-mosses thus diffuse their microscopic myriads of seeds, or spores, relying upon the agency of the wind for their dispersion. And where might they not thus be carried? The pyrotechnic Lycopodium, which perhaps explodes aloft in the rocket, is none other than this identical powder; but in this artificial flight it doubtless falls far short of its occasional free altitude in the wind.

What a wild, weird strain is that of the veery-thrush, as it rings out from its unseen source among the trees — to me the most strangely fascinating of our bird-notes. All through my boyhood this elusive voice echoed in my woods and in my heart with an indescribable, mysterious charm. Like Wordsworth's cuckoo, I had ceased to think of it as a bird — rather as a wandering voice, and one which had become so dear to me that I now regret the curious zeal which finally broke the spell and gave a mortal name to my minstrel. It is not to be compared to the other thrushes — the devotional hermit, the melodious wood-thrush, the joyous robin, or the garrulous catbird at his best. Like these it cannot be called sweet or melodious; there is a deeper, complex quality of tone in this wild wood-note which betrays a lack of character in other contrasting bird-notes, otherwise sweet and precious. It is thrilling and electrifying. There is a strain Wagnerian in it. It quickens a deep, latent emotional unison which is else quiescent and unresponsive.

The ventriloquial quality is nowhere more notable among our bird-songs, it seems to me, than in this voice of the tawny thrush. The lis-

tener, in locating the vocal source, finds it impossible to bring his eye and ear to a common focus, so to speak. Even with the bird in sight, with open bill and swelling throat, the song seems yet to have a separate existence far beyond, a spirit in the air, as it were. "*Weary*, O—*weary*, O—weary, O—weary, O!" is the distinct refrain, and I fancy a feathered life fated as a pilgrimage seeking for the truant song which still eludes captivity.

I have heard this bewitching voice as far back as memory can recall, always associating it especially with impenetrable wooded swamps, or the wilder forest solitudes, and many are the barriers of bramble, brier, and bur-marigolds, and much is the mud with which I have battled in the hopes of getting a glimpse of my fascinating songster.



NEST OF THE VEERY.

But wisdom came with years, and now the bird seeks me in my covert in the woods, and even leads me to her nest beneath the columbines.

Another familiar wood-note I must mention, from a singer long

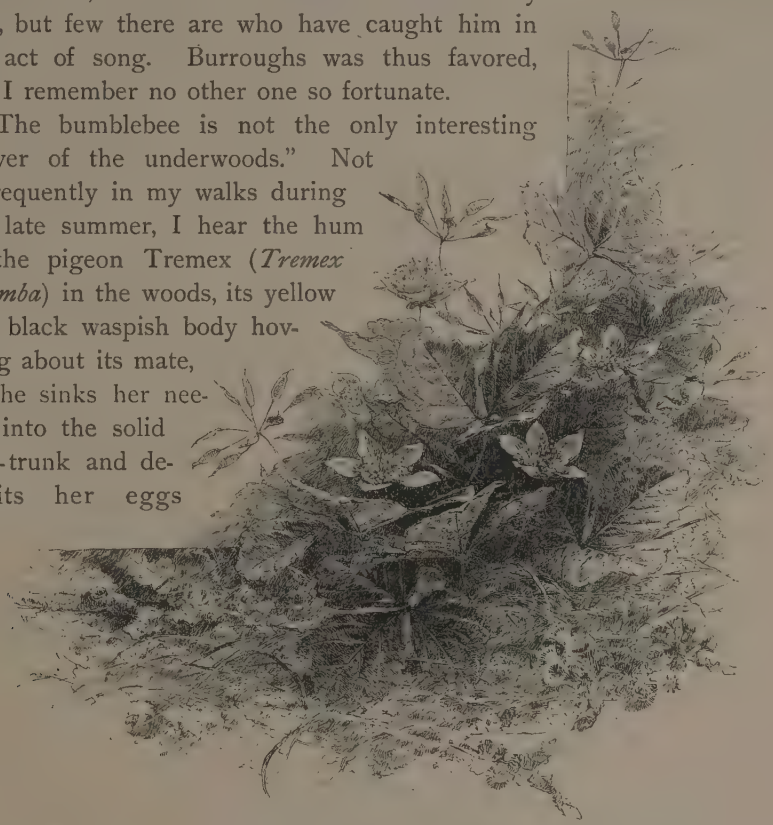
nameless to me except as the pretty black-cheeked gamin of the underwood, pert and saucy, with a patois peculiarly his own, and which once heard is not likely to be forgotten. My blow-gun — a long glass tube, with ammunition in the shape of hard clay balls — a weapon with which I had secured many a rare or unknown bird — had often sighted the target of this black cheek among the thickets; but the restless atom would seem to dodge the ball, my eagerness, as I paused to note the effect of my aim, often being rewarded with some such retort as this: "Whew! Chuck it away! I'm wary! Chuck whoo! chuck wary! wit-wit. Whew! get away!—too wary!—git, git, you cur-r-r-r! 'St, boy! boo! boo!" and so on for ten minutes, the performer ever and anon darting into sight at the least expected quarter, while he seems to have delegated his voice to a confederate far beyond in the bushes, so ventriloquial is his gifted throat. The songs of some birds are readily understood; their Anglo-Saxon is simon-pure, but in this jargon there is a little of everything. It is like the sputter of a pack of fire-crackers. There are occasional sounds — *mews* — which might deceive a catbird, other notes which parody the wood-thrush or the brown thrasher, and a host of other vocal ingredients. The identity of this pretty bird had eluded me, mainly because I had not discovered the art of divination; for once, while sitting patiently in the woods, he perched so close and remained so long in silent scrutiny that I was enabled to jot down his portrait in my note-book as readily as from a mounted specimen: "Back deep olive, breast bright yellow, belly white, black cheek and white eyebrow" — which, taken together with the score, my ornithology plainly named as the "yellow-breasted chat."

A sharp, whistling song of the redstart is a welcome wood sound — welcome not so much for its music as for the promise which it brings — a glimpse of one of the prettiest of our diminutive warblers and a constant friend of our woods, with plumage as sable as night, with a blaze of fiery morning sun upon his shoulder and ray of dawn in his fan-shaped tail. What a dainty bit of feathered life, as it flits about among the twigs, ever and anon expanding its rosy fan and translucent wing, like a butterfly in the sun!

The shrill note of the tree-toad is a faithful voice of the woods. A rare ventriloquist he, until the listener has learned his art, and thus traces him readily to his covert in the soggy rain-hole, or his perch among the leaves. But I fancy that there are several other sounds in our woods

for which this nimble-fingered piper wrongly gets the credit, notably, a shrill plaint, which is readily located at the ground-level, but whose source is rarely traced by the most careful listener. Occasionally, in overturning logs or stones in the woods, we disclose the recluse — a small red lizard, more properly a salamander. Following the direction of his note, I have thus sometimes secured my bird, but few there are who have caught him in the act of song. Burroughs was thus favored, but I remember no other one so fortunate.

The bumblebee is not the only interesting "rover of the underwoods." Not unfrequently in my walks during the late summer, I hear the hum of the pigeon Tremex (*Tremex columba*) in the woods, its yellow and black waspish body hovering about its mate, as she sinks her needle into the solid tree-trunk and deposits her eggs



KEYS TO HIDDEN TREASURE.

therein. What a wonderful implement this flexible, powerful borer! and yet to-morrow, perhaps, if we pass this way, we may discover even upon this very tree the still more marvellous weapon of another insect, the ichneumon parasite of this Tremex (*Pimpla lunator*), and her superior in her peculiar arts. The boring instrument of this insect, while as slender as a horse-hair, often penetrates the solid wood to the depth of

two and a half inches—an insidious, destroying thrust, which is the means of implanting a voracious foe within the body of the Tremex young deep in the tree-trunk. Both of these insects may frequently be found dead upon the trees, having exhausted their energy in the process of boring.

Let us linger for a moment beneath this lofty tulip-tree, now bare of leaves, its branches tipped with their erect, cone-like bobs of seeds, each bringing to mind its orange-spotted tulip-blossom of June. It is a pleasant pastime to throw a stick or stone among these branches and note the resultant fluttering swarms of winged seeds whirling in a maze against the sky. The arrangement of these flat-bladed seeds within their cone is a beautiful study.

The tawny drooping clusters of the winged ash-seeds make a pleasant rustle in the October breeze. They, too, are worth a little scrutiny. I wonder who may have been the first wise woodcraftsman to take the hint thrown out in this flat-bladed seed. For is not the timber of the ash a favorite with the oarsman? and in this seed have we not a perfect model of the Indian's paddle or the blade of an oar?

While seated in the woods, if your nostrils are at all alert, you may detect an occasional whiff like the scent of Russia leather, which it will puzzle you to identify. Sometimes the odor suggests the banana or pineapple. There is no floral perfume brought to mind, neither is it a common ingredient to the woodsy aroma of the leaf-mould in which it is one moment lost, or which it now absorbs in its intensity. Turning your attention to the windward, and following up the scent, you will be led to the trunk of a sugar-maple, or perhaps a birch, where the odor becomes decidedly pungent. A moment's search among the fissures of the bark, especially in the neighborhood of any abrasure, will disclose a large bronzy beetle, very likely a number of them, sipping at the oozing sap. This is the *Osmoderma scaber*, or maybe the *O. eremicola*, as there are two of them, the latter, however, the lesser in pungency and lacking the metallic lustre.

In the bare, firm earth at your elbow, perhaps, as you reclined on the bank, you may have noticed those smooth round holes, with their clean-swept, circular door-yards. Had you thought to probe their depths with a culm of grass, you doubtless had been surprised at the sudden, tenacious bite, and the "odd fish" you had landed on the surface, the ravenous, carnivorous larva of the nimble-winged tiger-beetle which you have so often seen in the hottest of summer days, measuring off the

rods along the sandy road with such tantalizing agility. Then there was that large, flat stone close by. Did you think to turn it? No? Then we will turn it now. Stay!—on second thought, not yet, for there is a whole book concealed beneath that stone, and our pages are already run —we have not time. Let it rest until we walk these happy hunting-grounds again, when we will test the Delphic oracle to the full.

I would be unfaithful to my trust as an humble advocate of the woods, should I take leave of them without a tribute to a certain significant and constant presence therein—yonder hovering symbol of the winged eyes, flitting into every nook and corner of copse or grove—a sylvan sprite known to the more prosaic page as a butterfly—the Alope (*Hipparchia*)—another happy emblem for the saunterer, at home in the lowliest plane of Nature, and yet with a gleam of sky in the very pupil of its eye. Who has not seen this mysterious petted protegé of the woods, with its yellow-banded, deep brown wings, each alert with its pair of jet-black eyes with their azure pupils? mysterious, I say, because of its elusive ways—all eyes when on the wing, and yet when sought upon its perch the very dried leaves, the twig, the bark of tree and lichened rock, all claim it as their own.

"The groves were God's first temples." Herein the inspired of Him have sung their noblest anthems, and the world is richer and better for their thanksgiving.

How now, my convert? Do you not feel a special quickening presence here within these dim aisles of the hemlocks, a lighter, surer foot, as though now at last you trod the path to a nobler, worthier fortune? Look about you: this glossy inviting carpet of intermingled leaves and blossoms; the *Coptis* with its lucky stars and proffered keys to buried treasure—emblems of nature's half-hidden wealth. For here is a paradox, indeed, thou generous, lowly little miser of the wood! What a wealth of golden roots!

Oh, for more *coptis gold* among our daily walk!—gold which is kept where wise Nature hath designed; for hath she not planted it in the earth, given it weight only as the token that it should keep the lower plane a means subservient to a higher life with fragrance, fruit, and blossom?

"In the woods," says Emerson, "a man casts off his years, and at what period soever of life is always a child. In the woods is perpetual youth. Within these plantations of God a decorum and sanctity reign,

a perennial festival is dressed, and the guest sees not how he should tire of them in a thousand years. In the woods we return to reason and faith. There I feel that nothing can befall me in life — no disgrace, no calamity (leaving me my eyes) — which Nature cannot repair. Standing on the bare ground, my head bathed by the blithe air and uplifted into infinite space, all mean egotism vanishes — I become a transparent eye-ball. I am nothing; I see all; the currents of the Universal Being circulate through me; I am part or particle of God."





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